



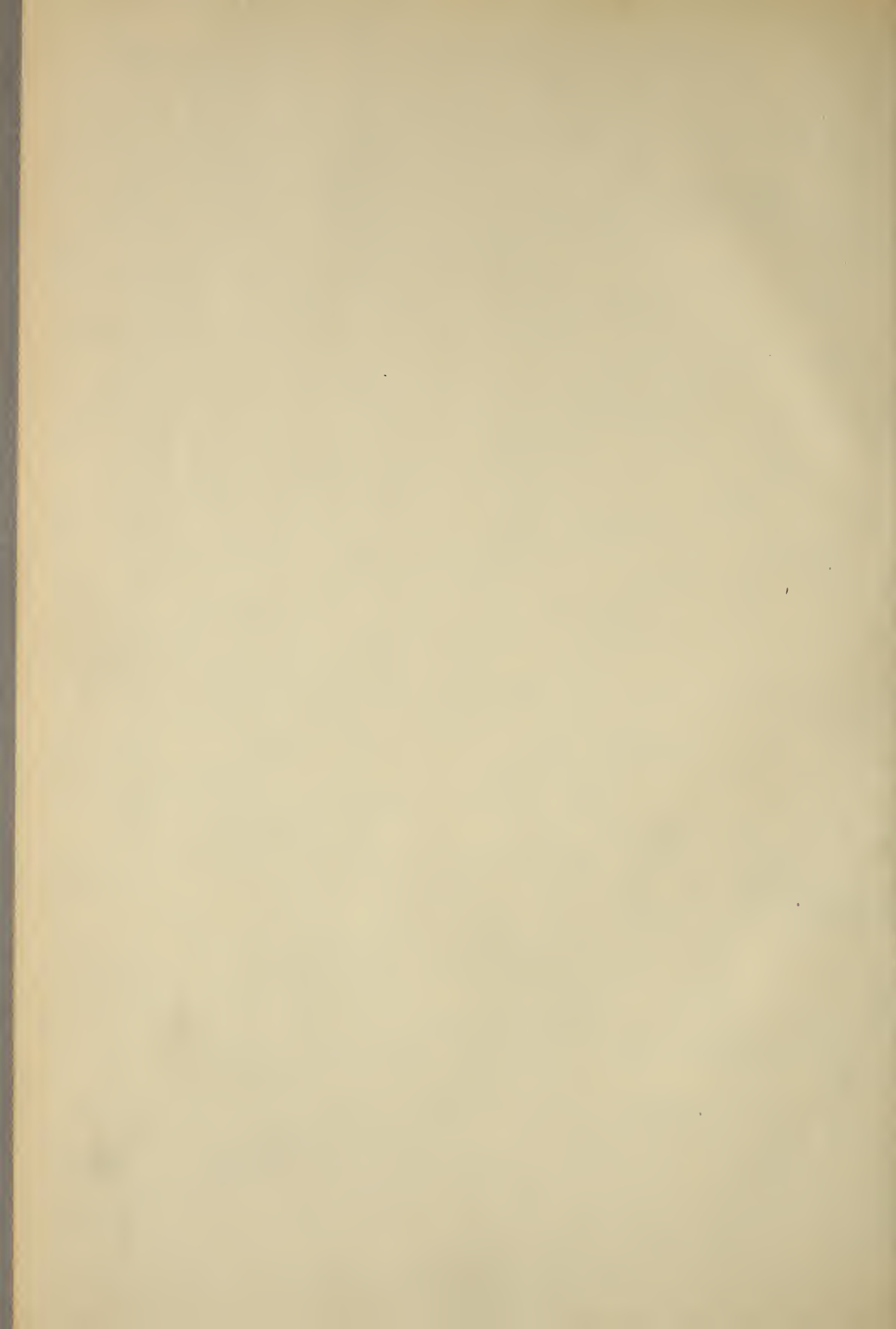


AMERICAN FOUNDATION FOR THE BLIND INC.  
GIFT OF









# The Sight-Saving Review

Volume I

Number 1

March, 1931

5  
copy 1

LEWIS H. CARRIS, *Editor*  
ISOBEL JANOWICH, *Managing Editor*

BOARD OF EDITORS

MARY BEARD, R.N.	EDWARD JACKSON, M.D.
E. V. L. BROWN, M.D.	A. B. MEREDITH
A. J. CHESLEY, M.D.	A. L. POWELL
CHARLES L. CLOSE	C. O. SAPPINGTON, M.D.
GLADYS DUNLOP	WILLIAM F. SNOW, M.D.
MARY V. HUN	WILLIAM H. WILMER, M.D.
THOMAS D. WOOD, M.D.	

The National Society for the Prevention of Blindness presents the articles printed in THE SIGHT-SAVING REVIEW upon the authority of its writers. It does not necessarily endorse or assume responsibility for opinions expressed or statements made. The reviewing of a book in THE SIGHT-SAVING REVIEW does not imply its recommendation by the National Society.

*Price \$3.00 a year; single copies 75 cents*

Published quarterly by the National Society for the Prevention of Blindness, Inc., Office of Publication, 1315 Cherry Street, Philadelphia, Penn.; Editorial Office, 450 Seventh Avenue, New York, N. Y.

Copyright, 1931, by the National Society for the Prevention of Blindness, Inc. Title Registered United States Patent Office

# Ernst Fuchs, 1851-1930—An Appreciation

William Henry Luedde, M.D.

A GIANT of science, Dr. Fuchs left behind an immortal name so closely linked to prevention of blindness that one cannot think of "eyes" without thought of "Fuchs." For more than half a century he gave unstinted labor to his profession. The respect aroused by this beloved humanitarian is movingly presented here.

CARRYING his torch high, our great leader hath fallen on sleep. What a magnificent torch it was!

How it shed light into darkened lives the world over! Constantly replenished at the Fountains of Eternal Truth, how unerringly it illumined the pathway of progress and achievement for those laboring to conserve the precious gift of sight throughout all nations. It was not the flickering though undying flame of an unknown soldier, but the beacon light of ophthalmic science set upon a high place by a chieftain known and beloved everywhere along the forefront of the battle for the prevention of blindness.

Hofrat Professor Dr. Ernst Fuchs was born in Vienna, June 14, 1851. He answered Fate's final roll call in the same city on Friday, November 21, 1930. During these fourscore years his personal influence was extended to every part of the globe reached by medical science.

While pursuing his medical studies he worked as an assistant in physiology at Innsbruck. After graduating in medicine he spent two years as surgical assistant under Billroth, thus laying a broad foundation for ophthalmic surgery and the training under Arlt which immediately followed.

He developed early that exceptionally well co-ordinated unison of clinical experience and pure scientific research which became an outstanding characteristic of his career as ophthalmic surgeon, author, and teacher. By personal investigation he became inti-

mately familiar with the problems presented by every variety of ocular disease.

At thirty years of age he was chosen to become professor of ophthalmology at Liège, in Belgium. It was at this period that he wrote the comprehensive monograph on the "Causes and Prevention of Blindness" which was awarded the first prize offered by the Society for the Prevention of Blindness of London in 1884. The jury making the award, composed of the ablest ophthalmologists of that day, frankly gave its unstinted praise to this essayist writing under the nom de plume "Viribus Unitis." A perusal of this rare and valuable book will convince anyone that the jury's selection is the chart whereby may be guided and directed all future efforts for the prevention of blindness.

Nearly fifty years later (1929) in Amsterdam, Holland, at a delightful gathering of international friends and admirers arranged by the Chicago Ophthalmological Society, the Dana Medal for Prevention of Blindness was presented to Professor Fuchs with the Latin inscription, the translation of which follows: "To Ernst Fuchs, teacher and physician and preserver of the gift of sight to the world, this medal, founded in America by Leslie Dana, is given." Around the rim of the decoration in letters of bold relief are the words: "Let the greatest gift of sight be preserved." In his response to the felicitations of representatives of England, France, Belgium, and other nations, he referred to the years spent at Liège as among the happiest of his life. Having just been married, he had entered his new professorship with zest and good cheer. His first son was born in Liège.

The international recognition he received while at Liège was only a foretaste of the universal homage that was to be his throughout life. He received the highest honors from the ophthalmic and scientific societies of both hemispheres.

After four years at Liège Professor Fuchs was recalled to Vienna to become the successor of Eduard v. Jaeger. The remarkable clinical knowledge which he exhibited as teacher and author was based on most thorough and extensive anatomical and pathological research. This he achieved under limitations of laboratory space and in spite of the incessant demands on his time by professional duties in a manner to excite the wonder and admiration of his

European colleagues, who knew best the restraints thus imposed upon him. His name attaches to many original observations, to the delineation of a variety of clinical entities, and to special surgical procedures. His mind ceaselessly recorded observations to be co-ordinated with facts discovered in the laboratory or hospital. Thus outings with his assistants on the snow covered hills round about Vienna furnished a basis for a study of erythropsia.

For well-nigh half a century ophthalmic literature has proudly recorded the contributions of his many sided genius. Even a mere review of the titles lies beyond our scope, but the greatest achievement of this distinguished teacher and author is his textbook on "Diseases of the Eye." It appeared in numerous editions and was translated into several languages, and soon became the standard throughout the world for instruction and reference about ocular diseases. His biographer in the Graefe-Saemisch Handbuch aptly remarks that each chapter was written as if it were the author's favorite topic, that it is never tiresome, but instructs as it entertains. Fundamental facts receive immediate recognition and emphasis, while "exemplary restraint" is shown about personal views on controversial problems. The author's readiness to receive with an open mind whatever may be new and to incorporate such ideas duly tempered by his personal experience and understanding into his textbook justifies that other striking comment concerning it, that the last edition is just as "modern" today as was the first edition when it appeared in 1889.

The thousands of students who were permitted to attend his surgical clinics bear testimony to the fact that, in addition to all other attainments, he was the master of ophthalmic surgery. His rich clinical knowledge and sound judgments were linked to an exceptional degree with a faultless surgical technique. American students owe a special tribute to Professor Fuchs, for he was the first in Vienna, while an assistant to Professor Arlt, to use the English language in giving them ophthalmic instruction. No greater impetus was given to American ophthalmology by any one person than by Professor Fuchs in his visit to this country in 1922, when he delivered his famous illustrated lectures on the histopathology of the eye to large groups of practising ophthalmologists and students in every section of this country.

His outstanding personal characteristics were clarity, goodwill, and serenity, joined with the innate modesty of true greatness. This happy combination of unusual gifts of mind and heart and soul was ever devoted to the welfare of the patient, whose unbounded confidence he merited and received.

In 1915 he voluntarily retired from his active professorship in order to devote all available time to ophthalmic research. His personal popularity encompassed every corner of distant lands, nearly all of which he visited, for he was an excellent and persistent traveler by land and sea and air. All the handiwork of man as well as the beauties of nature in earth and sea and sky appealed to him. From expressions of delight over the accuracy and legibility of the shorthand notes of a colleague, he would turn to an animated investigation of the vestiges of prehistoric moundbuilders. At seventy-eight he would set forth alone and unconcerned to visit the ruins of ancient temples and cities in Mexico and Central America.

To some it is given to be distinguished by great success in days of general prosperity. To others comes the distinction of outstanding leadership in times of much distress and sorrow. Professor Fuchs' professional and personal greatness of character shown forth under both extremes. He demonstrated how a man can be truly loyal to his Fatherland and yet not fail in his love toward all men regardless of political divisions and strife.

He trusted his fellowman, and in his simple, direct and friendly approach he conveyed this confidence so convincingly that it evoked an unfailing return of confidence, respect, and love from each one with whom he came in contact. How wonderfully simple and ideal international relations would become if every man met his brother in the spirit of this great ophthalmologist of all ages, who at the threshold of his beneficent career chose as his *nom de plume*, "*Viribus Unitis*"—"Through United Strength"—the union of all mankind for the prevention of blindness, for the welfare of the entire human family. It seems no more appropriate motto could be transmitted to the International Association for the Prevention of Blindness, which happily was organized last year with his cordial approval and active support. May the mantle of the master descend upon all those who shall go forth on this mission in every nation. Verily his works shall follow him.

## Prevention of Blindness in the United States\*

**W**ITHOUT an occasional "bird's-eye view" one is apt to lose sight of the woods because there are so many trees. This concise summary of the movement for conservation of vision affords a panoramic picture of the interwoven medical, industrial, educational and administrative problems involved.

**I**N the effort to reduce blindness much work of necessity must be concentrated on the causes which produce the largest amount of blindness and which show some likelihood of yielding to concerted action. Among the major causes of blindness are: ophthalmia neonatorum (babies' sore eyes), venereal disease (gonorrhea and syphilis), trachoma, glaucoma, cataract, and accidents (general and industrial). In addition to these there are many other causes of relatively minor importance, if measured by the aggregate number of cases involved. Much of the blindness due to them can be prevented through prompt and continued treatment by an oculist. It is generally agreed also that much of the blindness from the major causes is preventable; the estimates run from 50 to 75 per cent. Ophthalmia neonatorum, for instance, was formerly responsible for more than 30 per cent of the blindness among children entering schools for the blind in the United States; in 1930 it was responsible for but 9.5 per cent. Trachoma is another cause of blindness which might be entirely eliminated; and the organized efforts to combat venereal disease, if successful, would still further reduce the number of those who are unnecessarily deprived of sight.

### History and Present Status

The record of organized activities in this field covers a period of many years and represents the work of many different types of

\* Reprinted by permission from the *Social Work Year Book*, Russell Sage Foundation, 1929.

agencies, public and private. Among the governmental bodies are the federal, state, or municipal departments whose major interest is health, or labor conditions, or education; and also the commissions or councils created by some states especially for work with the blind.

The United States Public Health Service, in co-operation with the states, is active in establishing relief measures for trachoma, and maintains a quarantine service to exclude immigrants afflicted with this disease. It has also engaged in epidemiologic studies and laboratory research to determine the cause of trachoma, has gathered data regarding legal provisions for lessening ophthalmia neonatorum, and has published reports concerning venereal disease as a cause of blindness. It has likewise conducted several studies to determine the conditions of eyesight among school children. State boards of health, in connection with their activities for the control of communicable diseases, are helping to reduce trachoma and venereal disease. Most states have now enacted legislation which makes mandatory the disinfection of all babies' eyes at birth, thus lessening the likelihood of ophthalmia neonatorum. In addition the elimination of such diseases as diphtheria, measles, smallpox, and so forth, prevents some blindness.

Municipal boards of health co-operate with public school systems in providing medical inspection, which usually includes the examination of the eyes of school children. This has led to much preventive work. Public schools are concerning themselves with proper illumination, legibility of textbooks, and the removing of defective vision through doctors' care and provision of glasses at cost or free. Inasmuch as defective vision is often the result of other physical conditions, any general school health activities have as a by-product valuable results in the conservation of eyesight. Public schools also maintain sight-saving classes for pupils whose defective vision makes it difficult or impossible for them to carry on the usual work of the school. The first sight-saving class was established in 1913. At the present time there are 371 classes in 22 states and 104 cities. It is estimated that approximately one child in every five hundred should have the benefits of a sight-saving class. Both health and educational authorities participate in the establishment and maintenance of such classes. State boards

of education and the federal Office of Education are interested in and help to promote these developments in the schools.

Another group of public agencies deeply interested in the prevention of blindness are those which deal with industry. The federal Department of Labor, in collecting statistics on various kinds of accidents, includes figures on blindness or impaired vision resulting from accident. It also studies industrial diseases which may result in blindness or impaired vision, and preventive measures to avoid them. State labor departments which administer state compensation acts are charged with the provision of medical and surgical measures to restore sight. Usually, also, they are responsible for factory inspection, and often for formulating regulations to safeguard conditions of employment. To reduce accident hazard they require installation of protective devices, use of goggles, and so forth, with a consequent reduction of catastrophes to the eyes.

State commissions or councils for the blind are usually charged with some responsibility for the prevention of blindness, but the activities actually carried on vary greatly in different states. The commissions in Massachusetts, Missouri, New Jersey, New York, Ohio, and Virginia, the Pennsylvania State Council, and the Connecticut State Board of Education for the Blind are among the most active in the field of prevention.

Private agencies which carry on work for the prevention of blindness are of two kinds: those organized for this single purpose and those for which activities in this field are merely incidental to their general purpose. The National Society for the Prevention of Blindness, organized in 1915, is the only national agency of the first type. It conducts surveys, advocates preventive legislation, carries on educational publicity, and co-operates with other agencies which have a responsibility for conserving sight. It is the best source of information about the sociological, economic, and health aspects of blindness and its prevention. It has no state branches and has never actively promoted the organization of local chapters. There are at the present time, however, two active local societies—the Illinois Society for the Prevention of Blindness and the Maryland Society for the Prevention of Blindness—each of which has its own budget and is undertaking local educational propaganda as well as case work for the prevention of blindness.

The National Safety Council is active in this field as in the prevention of other handicaps. Through traveling exhibits, lectures, and publications it endeavors to demonstrate appliances and programs designed to lessen the danger of accidental loss of eyesight, and also tries to win the co-operation of industrial concerns and their employees in observing reasonable precautions. The Council likewise works through them in educating their families to the necessity of protecting the eyes from undue strain or accidental injury. Among other national agencies with which the National Society for the Prevention of Blindness regularly co-operates are the following: American Child Health Association, American Foundation for the Blind, American Medical Association, American Public Health Association, American National Red Cross, American Social Hygiene Association, National Education Association, Conference of State and Provincial Health Authorities of North America, and National Organization for Public Health Nursing.

### **Training Requirements and Opportunities**

Training in social case work is very desirable for any case worker in the field of prevention of blindness. A great part of such case work is carried on by social workers whose major activities are in family welfare or other fields. Social case workers in eye hospitals or clinics, or in state commissions and local associations for the blind, are among the relatively few who are employed entirely in the field of prevention of blindness. For such work the prerequisite is usually an approved course in public health nursing or in social work. Only rarely can persons qualified in both fields be secured. It is necessary therefore for the trained nurse to obtain some knowledge of social case work, or for the social worker to gain some knowledge of medical case work in the field of preventing blindness.

Training for teachers of sight-saving classes is almost indispensable because of the special equipment and technique involved in teaching children with seriously defective vision. The National Society for the Prevention of Blindness has aided various educational centers in offering such training. During 1929 it co-operated with four universities. In addition, courses were conducted at the Case School of Applied Science in Cleveland, Detroit City

College, and New York University. Full-time courses usually cover a summer session of six weeks.

### **Developments and Events, 1929**

At the close of the International Congress of Ophthalmology, held during the year in Holland, an International Association for the Prevention of Blindness was organized, with headquarters in Paris. The general aims of the International Association are similar to those of the National Society in this country.

In November the National Society for the Prevention of Blindness held a conference in St. Louis which discussed particularly co-operative relationships in the field, from the points of view of official and volunteer agencies primarily concerned with work for the blind and of official agencies responsible for the prevention of blindness. During the year also the Society compiled findings based on the inspection of the eyes of about 1,000 preschool children. It also put into effect an active co-operative relationship with the American Federation of Labor. Members of the Society's staff were called upon to address industrial groups throughout the country and to prepare articles for labor publications.

One of the outstanding benefactions of the year was a grant of \$250,000 by the Commonwealth Fund to Washington University, in St. Louis, for the purpose of carrying on research in the field of trachoma. The Leslie Dana Medal was bestowed by the Missouri Association for the Blind on Hofrat Ernst Fuchs, of Vienna, this being the first time that this award was made outside of the United States. It is bestowed each year on a person chosen for distinguished service, lay or professional, in the field of conservation of vision and prevention of blindness.

L. H. C.

## Conservation of Eyesight, with Especial Reference to Glaucoma\*

George S. Derby, M.D.

THE underlying principle of "prevention rather than cure" in modern public health activities has naturally directed attention largely toward children and young people. Dr. Derby, however, points out the importance of glaucoma—hardening of the eyeball—which is confined chiefly to the latter half of life. If discovered in early stages, glaucoma can almost always be controlled, and even when it is fairly advanced much can be done to prolong eyesight.

THE field of prevention of blindness, in which we are all interested, is a very large one, and many of its acres as yet have hardly been scratched by the plow of progress. We can look with satisfaction on the activities of the National Society for the Prevention of Blindness, and take a great deal of pride in its accomplishments, but we must not forget that prevention of blindness is still in its infancy. There remains a great deal to be done. How can we make every dollar of our very gratifying income pay the largest dividend? There are two sides to every question, but I must confess that in my own humble opinion we should concentrate our efforts on the very large opportunities for prevention which lie at our doors, and not wander too far afield.

What is the most promising field for preventive work at the present? I believe beyond question, and I think that upon reflection you will all agree with me, that it is the eye hospital, for to the many eye hospitals of this country come each day many thousands of people with abnormal eyes. Of these many thousands, only a small percentage is handled with prevention in mind. This is a

\* Presented at the Annual Meeting of the National Society for the Prevention of Blindness, November 18, 1930.

fact that can be and has been verified. Read the Philadelphia Hospital and Health Survey, published a short time ago. I think in the past our Society has rather hung back from going into the hospitals, led by the fear that it was bad policy to risk a possible antagonism on the part of the medical profession. I personally believe that the matter can be so handled that such antagonisms will not develop. Now to illustrate what I mean I am going to talk a little in detail about an experiment which I invited the National Society to make nearly three years ago, an invitation to which the powers that be cordially and whole-heartedly responded after we had succeeded in convincing them that it was a justifiable experiment.

Last night at the Academy of Medicine we had a discussion on social service at which I know some of you were present. I hope many of you, because I feel that the development of eye social service is one of the most, if not the most, important factor in the prevention of blindness today. Hospital social service was started by Richard Cabot at the Massachusetts General Hospital in 1905. It has just celebrated its twenty-fifth anniversary. Some far-seeing people interested in prevention placed a social worker at our great eye hospital, the Massachusetts Eye and Ear Infirmary, in 1909. This I believe was the first real eye social service in this country, probably in the world. This tender flower has grown to be a sturdy plant. We have now six eye workers. With the help of these eye workers our hospital has been enabled to do a very considerable work in the prevention of blindness. It took several years at least for our social service department to fix its roots so that it was ready to expand, and then, under the advice and with the co-operation of the medical staff, intensive work among special types of eye disease was undertaken, I think I may say very successfully, along the following chief lines: gonorrheal disease of the eyes in babies; tuberculosis of the eyes in children and adults; hereditary syphilitic disease of the eyes in children; and progressive myopia.

These were all diseases of children and young adults, but a very common disease, largely of the latter half of life, remained outside of our efforts. The need of tackling this great problem was evident, but we did not have the means. It meant a special social

worker, and it was this problem that has been financed in our hospital by this Society. The disease is glaucoma, hardening of the eyeball, and it causes one-quarter to one-third of all blindness in this country occurring after the age of forty-five. If discovered in its early stages, it can almost always be controlled, and much can be done to prolong eyesight even in those in whom the disease is fairly advanced. Think of the enormous amount of eyesight which is unnecessarily lost! I am going to show you a few pictures which I hope will explain to you what I am talking about.

### **Anatomy and Physiology of the Normal Eyeball**

In the first place, it is necessary to learn a few facts about the anatomy and physiology of the normal eyeball. This can be accomplished best by means of diagrams: Figure 1 is a section of the human eyeball cut lengthwise. The letter "A" is the clear watchglass front (cornea) of the eyeball through which we look; "B" is the anterior chamber, a space filled with clear fluid, known as the aqueous; "C" is the iris, a movable diaphragm, the opening of which is indicated as "D", the pupil. Back of the iris and the pupil lies "E", the lens which focuses the rays of light. The interior of the eye, "F", is known as the vitreous chamber, and is filled with a clear, jelly-like fluid. The little frill-like processes, "G", which surround the lens, are to be noted; these are the ciliary processes. They are very important and will be referred to again later. In the back of the eye is "H", the great optic nerve whose fibers spread over the interior of the eye and form the retina.

If you will place your fingers on your eyeball, you will find that it is firmly elastic to the touch. In other words, to maintain its shape and fulfil its functions the fluids within the eye must be maintained at a certain degree of tension or pressure. Now this concerns us deeply, since glaucoma represents an increase of the pressure within the eye. Let us see the mechanism by which this pressure is maintained. Let us draw a line vertically through Figure 1 and take the front half and magnify it into Figure 2. We now see more clearly "G", the little frills which are known as the ciliary processes. From these processes is thrown constantly the watery fluid known as the aqueous, which maintains the pressure in

the eye and nourishes some of the structures, like the lens, which have no blood vessels. A small amount of this fluid passes back into "F", the vitreous, but most of it passes forward through the pupil into "B", the anterior chamber. Here it must find some way of escaping from the eyeball or it would accumulate there and the eyeball would become hard. To accomplish this purpose there is

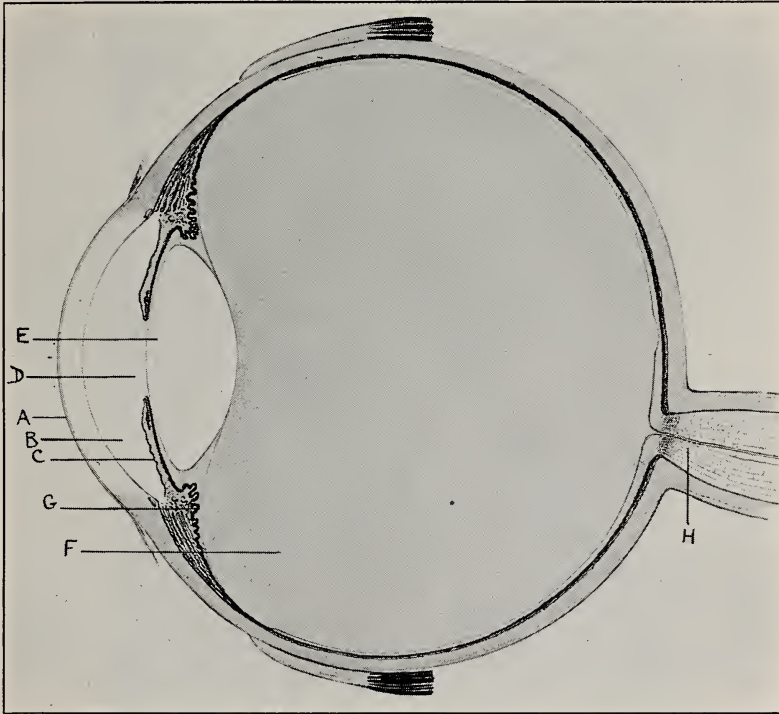


Fig. 1.—Cross-section of the human eye. A, cornea; B, anterior chamber; C, iris; D, pupil; E, lens; F, vitreous chamber; G, ciliary processes; H, optic nerve.

a very delicate little sieve situated at the angle of the anterior chamber and known as the pectinate ligament, indicated by the letter "I". Let us take an enlargement of this region and call it Figure 3. "A" is the margin of the cornea, "B" is the angle of the anterior chamber, "C" is the root of the iris, and "D" is the sieve known as the pectinate ligament. This little sieve or filter

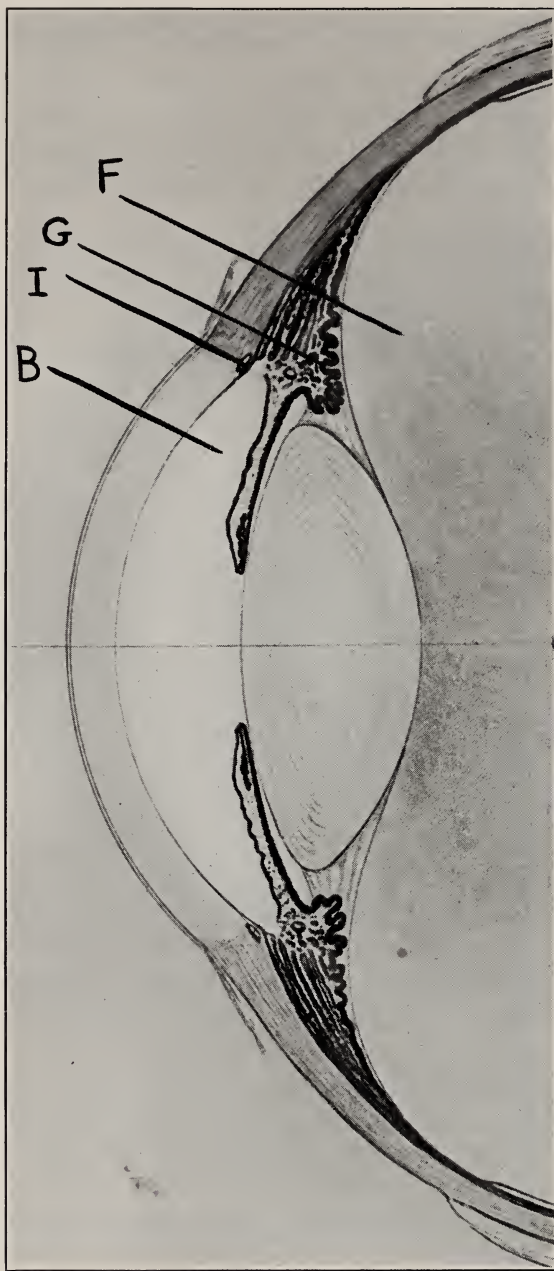


Fig. 2.—Enlarged front of an eye as seen in Fig. 1, showing the ciliary processes more clearly. F, vitreous; B, anterior chamber; G, ciliary processes; I, pectinate ligament.

allows the fluid to escape from the eye into the meshes of the sieve and from there into a system of veins which convey it outside the

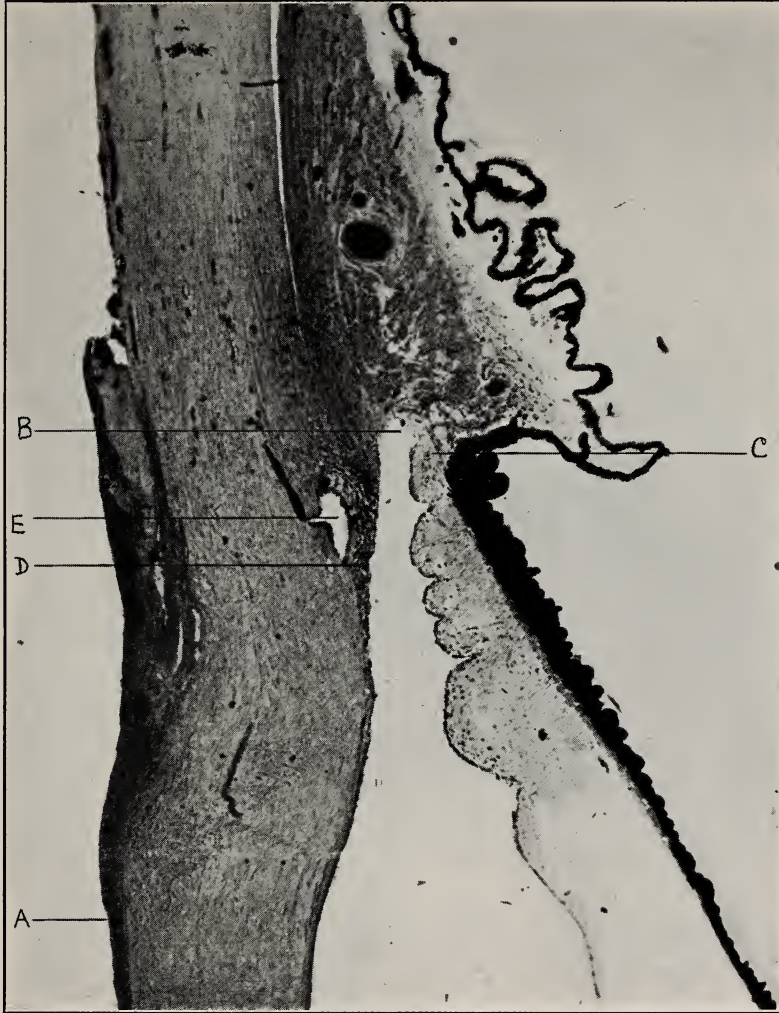


Fig. 3.—The angle of the anterior chamber, showing important points in the development of glaucoma. A, margin of cornea; B, angle of the anterior chamber; C, root of the iris; D, pectinate ligament; E, channel which conveys fluid outside the eye.

eyeball. "E" is a large channel whose function it is to convey the fluid outside the eye.

### What Causes Glaucoma

Now let us suppose that these outlets from the eye become stopped up. Then the pressure within the eye will rise and a serious condition will develop because the delicate structures within the eye, the delicate nerve-fibers which spread out from the optic nerve and form the retina, become compressed. When this condition of increased pressure of the eyeball occurs, it is known as

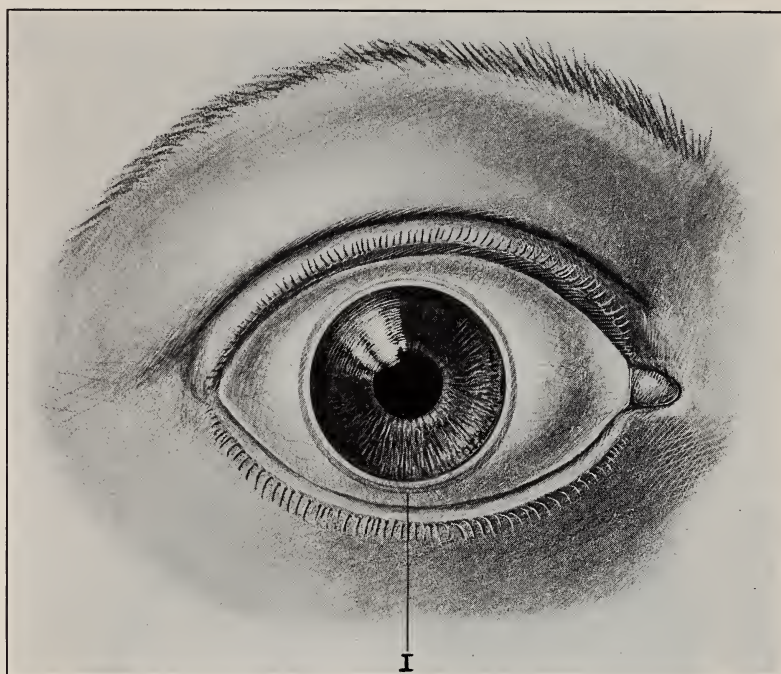


Fig. 4.—Front view of the human eye. Large black center is the pupil; surrounding dark area, iris, and outer circle, I, is a diagrammatic representation of the tiny channel through which fluid is removed from the eye. In Fig. 3 it is designated as E.

glaucoma. We do not know the causes of most forms of glaucoma, but we know what happens.

Figure 4 shows the front of the eye. The outer circle, "I", represents the sieve-like pectinate ligament through which the aqueous fluid drains. Now one of two things can happen: the whole circle can suddenly become stopped up by pressure from be-



Fig. 5.—An enlarged reproduction of the angle of the anterior chamber, showing partial blocking of the pectinate ligament. A, point at which root of the iris is adherent to the back of the cornea.

hind; or it may slowly become stopped up. This rapid stopping will cause a sudden rise in the pressure within the eye; the eye becomes rather hard, it is red, the pain is intense, the front of the eye becomes gray and cloudy, the sight becomes dim, and finally, unless the pressure is relieved, sight is permanently lost. This is known as acute glaucoma. The pain is so acute and the loss of sight so alarming that the individual almost always seeks medical advice and sight can usually be restored by a skilful operation if performed within the first day or two. This form of glaucoma furnishes its own unmistakable danger signals.

The form of glaucoma which we wish to bring to your notice is one without early danger signals, a form which causes an infinitely greater amount of loss of sight and blindness than does the acute form. Let us suppose that the drainage apparatus which we have described becomes obstructed gradually and that the pressure within the eye becomes higher by degrees. The delicate fibers of the optic nerve gradually lose their function and die. (Compare Figure 5 with Figure 3.) Here the pectinate ligament has become partially blocked, some fluid can still get through, the root of the iris has been pushed forward and has now adhered to the back of the cornea. This change is practically always found in cases of chronic simple glaucoma, which is the type of disease which is so important for us to understand. Let us now go to the back of the eye and see what changes increased pressure produces there. Figure 6 represents the posterior half of the eye. We see the optic nerve, "A", spreading its fibers over the interior coat of the eye, "B", the retina, the seeing membrane of the eye. The pictures of all objects which we see are thrown on this membrane from the outside world. If these pictures are to be seen distinctly, they must fall on one small area, the macula lutea, or yellow spot, which is situated directly in the center of the back of the eye. The yellow spot, "C", forms a small depression in the retina. The entrance of the optic nerve has no retina over it; therefore it is blind and it is known as the blind spot. Every one has this blind spot. If you will close your left eye and hold Figure 7 about 10 inches away and look at the circle the cross will not be seen—its image falls on the blind spot. If you will hold the tip of your finger a few inches away directly in front of your right eye with your left one closed

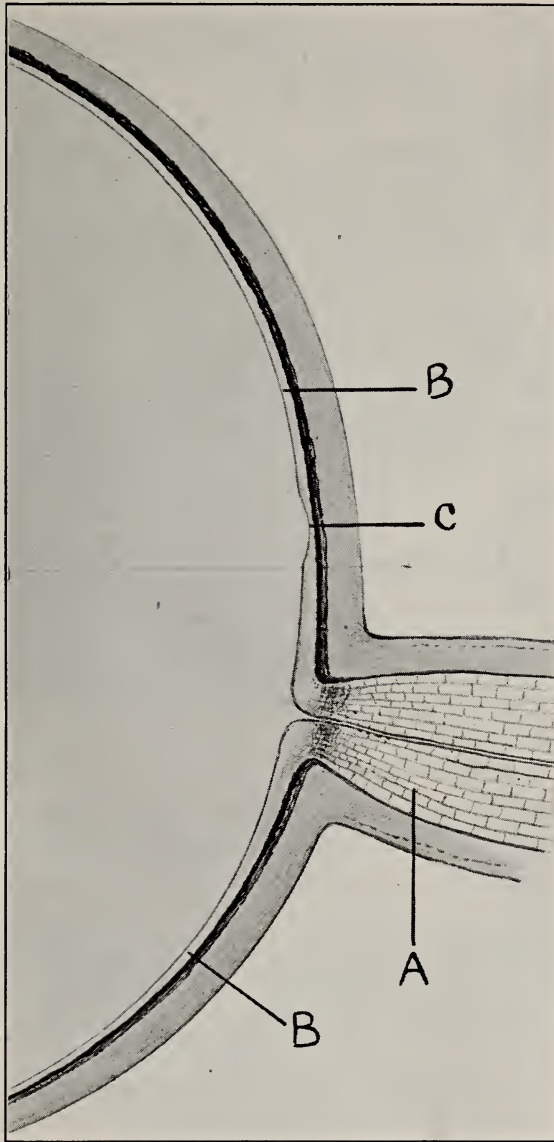


Fig. 6.—Cross-section of the posterior part of the eye, showing, A, optic nerve; B, retina; C, area of the macula or place of acute central vision.

and look directly at your finger tip, you will find that your clear vision for objects beyond is lost and that the objects that you see around your finger tip are seen indistinctly; only objects seen with central vision are seen distinctly—everything else is blurred. In the development of the human species central vision is a late acquisition. The lower animals do not have it. The rabbit cannot see anything very distinctly, but he makes up for it by being able to see almost around the whole circle, as his eyes are placed in the side of his head. Thus his very wide field of vision is a great protection against danger. In the human species the eyes are placed in the front of the head and the field of vision of each eye is limited by the conformation of the face. To the outer side one can see at right angles ( $90^\circ$ ); at the nasal side the limit is about  $60^\circ$ ; below,  $70^\circ$  to  $80^\circ$ ; above,  $45^\circ$  to  $55^\circ$ . These facts about central vision and

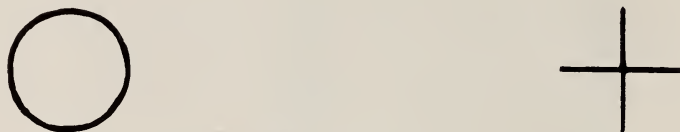


Fig. 7.—Chart used to locate the blind spot. By closing left eye and looking at the circle at a distance of from 8 to 10 inches, the cross is invisible, since its image strikes the blind spot of the eye, i. e., where the optic nerve enters the eye.

the field of vision must be known if we are to appreciate the changes which take place in chronic simple glaucoma. Figure 8 represents the normal field of vision of the right eye as you face it. "A" is the central area of acute vision; "B" is the blind spot; "C" is the nasal side constricted by the nose; "D" is the outer or temporal side. (Compare Figure 9 with Figure 6.) In Figure 6 we see the normal optic nerve entrance; in Figure 9 we see the nerve entrance in glaucoma. How the nerve fibers have been pressed in is evident. This concavity, "A", is known as a glaucomatous cup. Looking into the eye with an instrument known as an ophthalmoscope one sees Figure 10, the normal optic nerve head. Figure 11 represents a nerve head showing a glaucomatous cup. This cup is caused by the increased pressure in the eye. This increase in pressure can be accurately measured by an instrument known as a tonometer. A drop of holocain to render the eye insensitve is applied, the base of

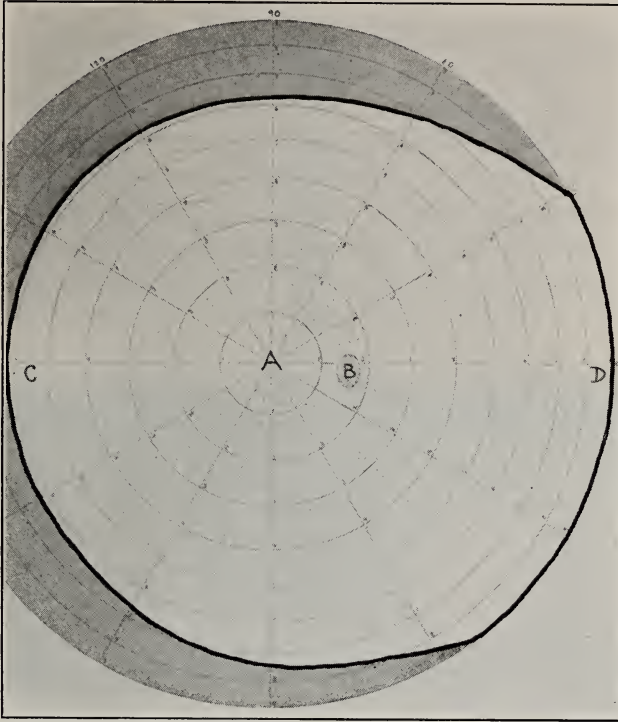


Fig. 8.—Diagrammatic charting of the field of vision of a normal eye. A, center area of acute vision; B, blind spot; C, nasal side; D, temporal side.



Fig. 9.—Cupping of the optic nerve due to the high inside pressure in a glaucomatous eye. A is known as a glaucomatous cup. Compare with Fig. 6.

the tonometer is placed on the front of the eye, and a reading is taken. Figure 12 represents the tonometer of Schiötz. Figure 13 indicates the base of the tonometer indenting the front of the eye. Thus we now have two signs by which chronic simple glaucoma can be recognized by the expert physician who has specialized in diseases of the eye. He can look into the eye and see the glaucomatous cup, and he can determine the increased pressure with the tonometer. Now the increased pressure damages the fibers of the optic nerve which form the retina and this damage shows itself in a peculiar way. It affects the yellow spot and central vision late in

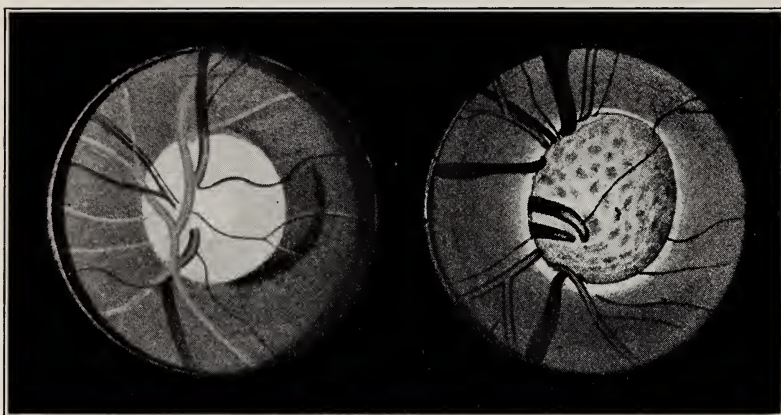


Fig. 10

Fig. 11

Figs. 10 and 11 illustrate respectively what a doctor sees in a normal eye and a glaucomatous eye through an ophthalmoscope: 10 is a normal optic nerve head; 11 is a glaucomatous one.

the disease. Thus, up to a late stage in chronic simple glaucoma we can see directly in front of us just as well as we ever could. This is one reason why so much loss of sight is caused by this disease, because as long as a person can see distinctly in front of him he does not become alarmed. When central sight becomes indistinct the disease is in a late stage and much more difficult to contend with. The field of vision, however, becomes affected relatively early in this disease and if we know the characteristic changes which occur and can find them by making a chart of the field of vision, we are in an immediate position to help the patient. There

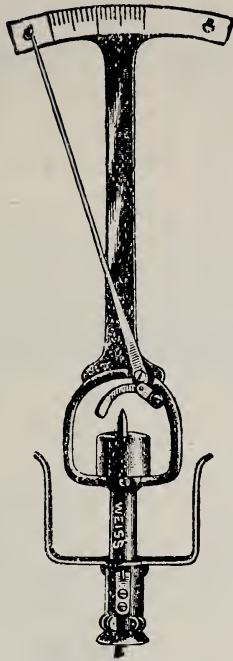
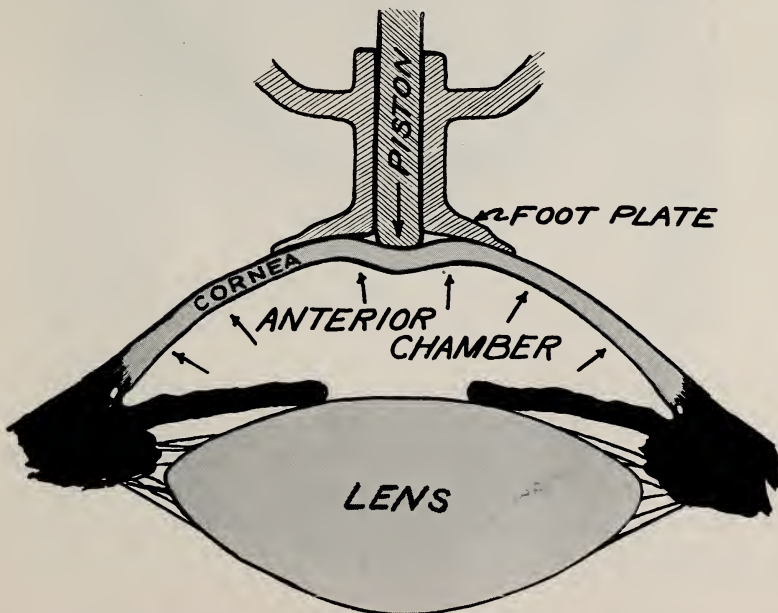


Fig. 12.—Tonometer used to measure the pressure in the eye.



## PRINCIPLE OF TONOMETRY

Fig. 13.—Indicates the base of the tonometer indenting the front of the eye.

are two characteristic early changes in the visual field. One is a characteristic notching, like a piece of pie, on the nasal side, known as the nasal step. The second is an enlargement of the blind spot known as Bjerrum's sign.

Compare Figure 14 with Figure 8, showing the normal field of

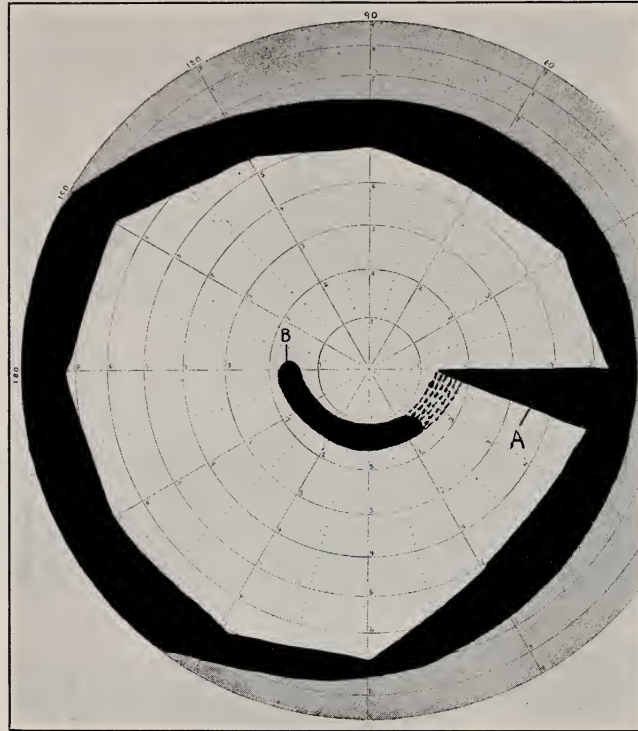


Fig. 14.—Diagrammatic charting of the field of vision, showing slight progress of glaucoma. The white area still sees; the encroaching black areas are blind. Compare with Fig. 8.

vision of the left eye. In Figure 14 we see the nasal step, "A", and the enlarged blind spot, "B". Compare Figure 8, the normal field of vision, with Figures 14, 15, 16, 17, and 18, showing various types of progressing glaucomatous fields. The white areas represent the part of the field which still sees; the black areas are blind.

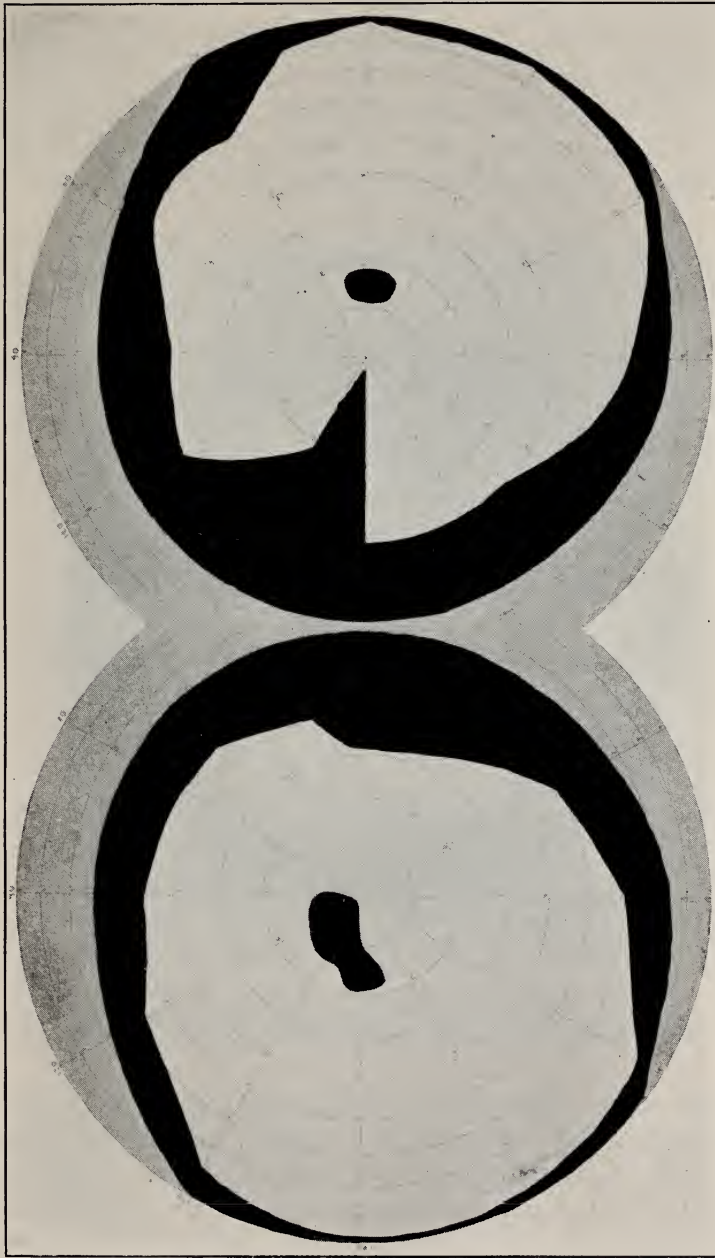


Fig. 15.—Diagrammatic charting of the field of vision, indicating extension of the blind area in the glaucomatous eye.

### Signs of Chronic Simple Glaucoma

We now have the three cardinal signs of chronic simple glaucoma which can be recognized by the expert: the increase of pressure, as measured by the tonometer; the cupping of the nerve head, as seen with the ophthalmoscope; the contraction of the field of vision, best measured by an instrument known as the perimeter. The

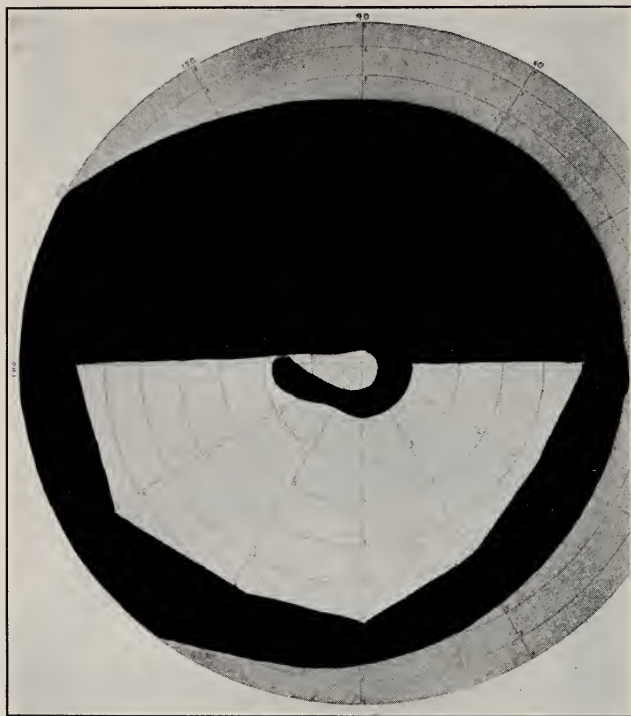


Fig. 16.—Diagrammatic charting of the field of vision of a glaucomatous eye in a still more advanced stage, showing darkened area of blindness encroaching further in the field of vision.

field of vision can, however, be measured roughly by closing one eye, looking straight forward with the other, and moving the hand (especially on the nasal side) in from the periphery. In this way a rough idea of the visual field contraction can be determined. In advanced glaucoma the hand may be brought in to the center or farther before it is seen.

In Figure 17 only a small area of the visual field remains. The patient's sight is constricted and the world appears to him as though he were looking through a rifle barrel. And yet he can read print, one or two letters at a time, if they are placed directly in the right position.

There are minor signs of glaucoma also which the patient may

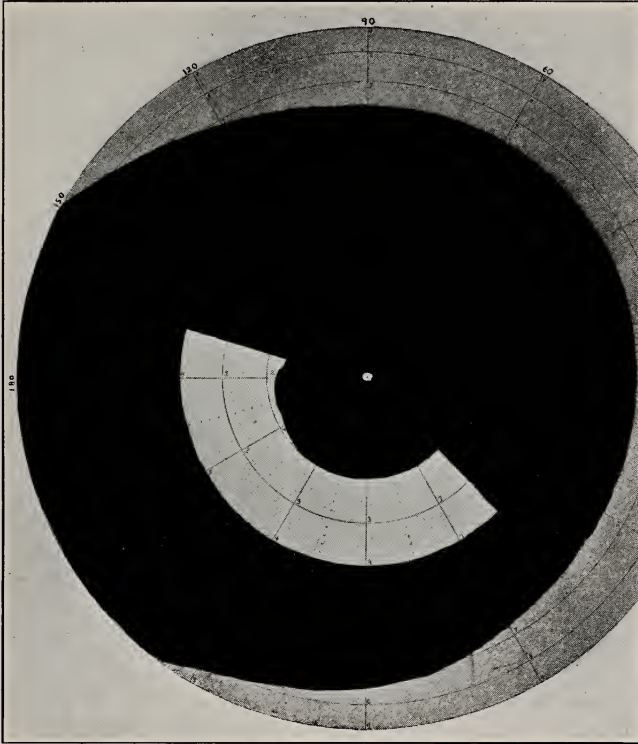


Fig. 17.—Diagrammatic charting of the field of vision of a glaucomatous eye, showing only a small area of the visual field remaining.

notice: temporary haziness of vision, the seeing of rainbow rings around lights at night, difficulty in reading, the necessity of a very rapid increase in the strength of one's glasses. But glaucoma can exist without one's noticing such signs, and it is therefore advisable after middle life to have a periodic examination of the eyes made by an expert.

### Treatment of Glaucoma

Glaucoma if untreated leads to blindness. Glaucoma recognized late is exceedingly difficult to control. Glaucoma recognized early lends itself much more favorably to treatment. What is the treatment of glaucoma? It must be some method which will bring back



Fig. 18.—Advanced glaucoma. Only center area of vision left.

to normal the increased pressure in the eye. This naturally cannot be accomplished by glasses. There are certain drugs known which contract the pupil and lower the pressure in the eye. In certain cases, carefully selected by the expert, these drugs may be used to control the disease and drops are therefore put in the eyes regularly four or five times a day. In spite of using these drops the disease is likely to progress slowly and after a time the drops lose their effect. Therefore, in most cases the proper treatment of

glaucoma is an operation skilfully performed. We have shown in Figure 5 how the drainage area of the eye becomes partially blocked. Once blocked in this way, it can never be restored. But it is usually possible to make a new drainage pipe which will keep the pressure of the eye permanently low. Such operations are now being performed throughout the world by the hundreds, and show a very large percentage of success. Let us remember one other thing: Chronic simple glaucoma almost always sooner or later affects both eyes.

If we can get these people early, and usually we operate, then sight can be saved, certainly prolonged. More should be known by the public in regard to glaucoma. The medical profession should be informed of the waste of sight. The budding oculists should be specially instructed in this disease and in the very delicate tests which are necessary often to detect it, and always to measure its progress.

### **Medical Social Service in Glaucoma**

The National Society gave us a worker. We reorganized our clinic so that we could give special attention to these cases; they require a time-consuming examination, and it is necessary to see them frequently. Every glaucoma patient must visit our clinic at least twice a year. They are a difficult class of case to handle, because you cannot restore their eyesight. The best you can do is to preserve what they have. They feel that they are not improving, they go to other hospitals, to quacks, etc. We had handled a somewhat similar problem with our hereditary syphilis cases some years before. We found that the social worker and a proper medical organization were the answer then, as they are now.

### **Glaucoma in the Massachusetts Eye and Ear Infirmary**

Let me give you a few simple figures to show what the result has been up to the present time.

In 1926, 209 glaucoma cases were being worked on intensively by our social service department. We had some 300 additional names on a follow-up list, but we were able to pay but little attention to them. A postal card sent, now and then, asking them to report accomplished little.

In 1927 there were 262 glaucoma cases listed for intensive work. In 1928 Miss Janet Gorton, the worker furnished by funds from the National Society and trained by us, took hold, and the real increase began. That year we handled 582 cases and the patients were all seen, interviewed, worked with, and the majority visited in their homes.

In 1929 we had 740 cases, and in 1930 we shall show as many or even more cases. For each of the last two years we have had 316 new patients, and 20 reinstated. The average is 9.8 glaucoma cases per day in the clinic. Of a total of 279 cases of primary glaucoma only 18 refused to co-operate at all, and we lost sight of only 7. In 1928, 55 cases of primary glaucoma were admitted for operation. In 1929, 116 cases were admitted for that purpose. Under the old system it was quite a usual experience to have a patient on whom an operation was deemed necessary refuse in spite of all the arguments we could bring to bear. At present, when the patient refuses, we call the social worker and say, "This patient should come in to be operated on." A week or so later the social worker remarks that Mr. So-and-So will be in next Monday for his operation. Miss Amy Smith, head social worker of the Massachusetts Eye and Ear Infirmary, reports that in 1929, 126 patients were aided by some relief or welfare agency. This figure shows that there is not a large proportion of very poor patients; that the majority of patients are on a little better economic basis; that a great deal of the work is educational—interpreting the medical situation to the patient; and that the work is very constructive.

While this glaucoma experiment has excited our intense interest, it has been a severe tax on our medical staff, which is one of the reasons why we are now adding an extra interne to the hospital.

Even the few figures I have presented speak eloquently. The 740 glaucoma patients we had last year were candidates for blindness, and certainly we have done a great deal toward preserving their sight during life, or at least in prolonging their vision.

Eye social service is very undeveloped throughout the eye hospitals of the country, often non-existent. Glaucoma is only one of the serious eye diseases which lends itself to attack by these methods. Our social service department has offered without charge to train for eye hospitals any workers who may be sent to us. In

my opinion a very great opportunity is now knocking at the door of the National Society for the Prevention of Blindness, and I would strongly urge that in the future a substantial sum be set aside in the budget each year to train a certain number of workers in eye social service, and to place them in hospitals at strategic points throughout the country. If carefully chosen and financed by the Society for a few years, I feel confident that they will prove their value and will be taken over by the hospital authorities. This is, in my opinion, one of the most potent methods of conserving eyesight. It is to be sincerely hoped that this Society will feel constrained to direct more of its activities into this field.

# Fundamentals of Lighting in the Home, Classroom and Industry\*

A. L. Powell

**M**ANY persons overlook the importance of proper illumination for the conservation of vision. As diseases and accidental injuries may cause blindness, so poor lighting may eventually lead to impairment of vision.

**A**S a youngster I was always quite fascinated by the vaudeville acts of jugglers and the magicians. I learned a story then which I shall always remember. We are still all children and we like to have the speaker play with something, have, as it were, a bag of tricks so that we can see the wheels go around. So I very rarely take up the subject of lighting without a few pieces of simple experimental apparatus.†

I should like to refresh your memories on some things which are not necessarily new, but which are vital. Through constant education on the part of many organizations there has grown up a greater and greater appreciation of what light will do in promoting efficiency. Unfortunately, however, this knowledge has been chiefly put into practice only in business organizations—industrial plants, offices, mercantile establishments—which are lighting to far higher levels than ever before. This is good business.

In our schools a most deplorable state of affairs still exists, particularly in the older buildings, and even in some of the new ones. We are nowhere near to that quality and level of illumination that we find in the ordinary good office. This is almost criminal, because children's eyes, as you know far better than I,

\* Presented at the Luncheon Conference on the Relation of Lighting to Vision Conservation, Annual Conference of the National Society for the Prevention of Blindness, November 17, 1930.

† Editor's note: Very interesting exhibits and slides were used to illustrate this talk.

are in a formative state and need better lighting than the eyes of adults.

In addition, the children's homes, where they must do most of their studying and reading, are poorly lighted. Sometimes I almost give up my job when I go from home to home and see the kind of illumination people endure. Apparently they never realize the need of good lighting. They will change their draperies and their furniture, but go on with antiquated types of fixtures, designed for low power candles, gas lamps, etc. If there ever was a curse and an abomination to good lighting, it is the ordinary type of side bracket placed on the wall, directly in the line of vision. In it we find fifteen, twenty-five and sometimes as high as sixty or even seventy-five watt lamps, used unshielded. The idea of placing a big lamp bulb on the end of a paper tube, putting on some imitation grease to make it look like a candle and having a little cup to catch the grease is about as far from logic as it can be. Yet this type of fixture is still being sold. Thank goodness, in so-called modern art it is going to be eliminated gradually.

Incidentally, do not be too critical of what is called modern art. Modern lighting is not necessarily fantastic. A modern lighting fixture, as I define it, is one that gives the modern light source—the Mazda lamp—a square deal. On that basis, there are many excellent types from which to make a choice.

It is often very difficult to talk to the housewife about what is wrong with her lighting. She uses it every day, is familiar with it, and therefore thinks she knows all about it. Then, too, random statements are often made by architects, decorators and others who have never given lighting serious thought. They do not know the fundamental principles of illumination. One of the most common examples of this lack of understanding of the principles of illumination is the mistaking of brightness or glare for excessive lighting. I remember about ten years ago a group of physicians investigated the lighting in some offices in lower New York. They reported that the majority were overlighted. When the illumination was measured, it was found to be far below the ordinary commonsense standards. Glare had been confused with amount.

Recently I heard a very prominent architect give a talk in the course of which he said, "In lighting a room you can have too little

light, but it is just as bad to have too much light." I have never yet seen a case of too much light. Again glare was confused with amount. The normal interior illumination may have five, ten or fifteen foot-candles, yet out of doors, as you know, our eyes function under 300, 500 and 1,000, and on a bright day, even up to 10,000 foot-candles.

The foot-candle is a simple thing. It is the measure of the amount of light on the work. The thermometer is available to measure the amount of heat present. You are comfortable when the temperature is seventy or seventy-two degrees, but you may not know what a degree of Fahrenheit is. Similarly, there is the means of measuring the amount of light on a working surface. This device is called a foot-candle meter. The amount of light is ascertained by placing the foot-candle meter at a normal working level and reading the results registered on the meter, in a manner similar to that in which you read the thermometer.

We must obviously have enough light on the work to see comfortably. Lighting engineers and societies have worked out the standard illumination for different classes of service. These standards are presented in the government bulletin, "The Code of Lighting School Buildings" (publication number 382, United States Bureau of Labor Statistics). This code contains a wealth of information; it is a veritable handbook for your guidance. It tells us that for classrooms the minimum of illumination should be five foot-candles; a level of ten foot-candles is, however, recommended.

What does this level of illumination mean to us in our ability to see? You are more familiar with the Snellen chart than I am. If you were to go into an ophthalmologist's office, or any other place where this chart is used, you would probably find fifty different levels of illumination used in as many offices. This subject was investigated as a basis for a paper on a study of illumination of standard eye test charts and it was found that medical men had, in general, no full appreciation of the fact that illumination makes a marked difference in visual acuity.

We have tested visual acuity under poor light and then in increased light on probably tens of thousands of people. There has never been a case in which the visual acuity ascertained by a

poorly lighted Snellen chart did not improve at least a line with a higher level of illumination. A man in an industrial plant may have his eyes tested on a chart which will be well illuminated with daylight. In another plant or another part of the same plant the chart will be badly lighted. Naturally his visual acuity appears to have changed. He may think his eyesight is failing, whereas the trouble is with the light on the chart.

It is interesting to know that in increased illumination objects appear to move more slowly, hence can be seen better. The application of this principle in illumination in industry needs no explanation.

Poor illumination is not confined to too little light, but glare is an even worse defect. I have seen workmen hang a bare, unfrosted lamp directly in their field of view. There is no doubt in my mind that they are not only producing a temporary effect on the vision, but, as a result of days of exposure, may actually injure their sight. Reflected glare is as bad as direct glare. This is a very important point as far as the school is concerned, because light coming from below strikes a part of the retina which is very sensitive and there is not the shielding effect of eyebrows. Many business men, working in an office with polished glass desk tops, do not realize that these continually reflect the light source overhead. They wonder why they have headaches.

Let us analyze roughly two or three points applying to school lighting. In addition to providing adequate lighting, the surroundings must be considered, since they have quite an effect on the illumination. In the second column of Table I is listed the effect of light ceilings and light walls. Thus a thousand watts may be necessary under correct conditions to illuminate a given room. If in that same room there are dark walls and ceiling, it will take, in the case of totally indirect lighting, practically three times the wattage for a given level of illumination; in the case of the ordinary enclosing globes, practically fifty per cent more. These figures are all available in "The Code of Lighting School Buildings."

There is another point; no matter how good the illumination provided, if the luminaires are not kept clean the results will be unsatisfactory. I have occasionally taken out fully a half handful of dead flies and dirt from globes. Housewives will clean the rest

TABLE I

## EFFECT OF COLOR OF WALLS AND CEILING ON WATTAGE CONSUMPTION

If 1,000 watts are required to illuminate a given area to a certain intensity with light (practically white) walls and ceiling, a higher wattage will be needed with darker walls and ceiling.

	Ceilings Light Walls Light	Ceilings Med- ium, Walls Medium	Ceilings Dark Walls Dark
R.L.M. standard dome (white bowl lamp) . . . . .	1,000	1,060	1,100
Glassteel diffuser . . . . .	1,000	1,080	1,140
Prismatic glass . . . . .	1,000	1,190	1,360
Totally indirect . . . . .	1,000	1,550	2,840
Enclosing globe . . . . .	1,000	1,240	1,550

of the house but leave the lighting fixtures absolutely untouched. With indirect lighting, if the fixtures remain uncleaned for twenty weeks (and some people allow them to go much longer), the illumination is cut down to about fifty per cent of its original value. Table II indicates percentages of depreciation in various types of luminaires.

TABLE II

## APPROXIMATE DEPRECIATION EXPRESSED IN PERCENTAGE OF INITIAL ILLUMINATION ON THE WORKING PLANE (ESTIMATED FROM TEST RECORDS)

Type of Unit	4 Wks.	8 Wks.	12 Wks.	16 Wks.	20 Wks.
R.L.M. standard dome . . . . .	4	8	10	12	14
Glassteel diffusers . . . . .	6	9	11	13	15
Opalescent enclosing globes (no vent) . . . . .	7	10	12	14	16
Translucent direct lighting bowl reflectors . . . . .	10	14	17	20	22
Semi-indirect . . . . .	14	23	32	36	40
Total indirect . . . . .	18	33	41	48	50

Figure 1 presents a night view of a grammar school classroom specially lighted for the benefit of children with defective vision. Six 300 watt lamps are used in color modifying glass enclosing



Fig. 1.—Adequate lighting for a sight-saving class.



Fig. 2.—Adequate lighting by metal and glass semi-indirect units for classroom.

globes mounted on the ceiling. The room is 24 ft. by 32 ft. with a 12 ft. ceiling. Six 25 watt Mazda lamps are used for the lighting of the side blackboards. The average illumination on the desks is 15 foot-candles, and blackboards are lighted to the same level. This illumination, somewhat higher than normally supplied, has proved very beneficial with these children who have sub-normal vision. The special blackboard lighting is another feature which has marked advantages. Figure 2 presents a night view of a class-



Fig. 3.—Manual training woodworking shop.

room lighted by metal and glass semi-indirect units. Diffusion is excellent, direct and reflected glare are at a minimum, and a neat appearance is presented by the installation. Four 300 watt, all frosted, Mazda lamps are used, providing a uniform illumination of 9 foot-candles on the desk top. Figure 3 presents a manual training woodworking shop with modern illumination. Two 100 watt Mazda lamps are used in diffusing enclosing globes 10 feet above the floor on 10 foot centers. The distribution of light is uniform,

the illumination level adequate, the room neat and attractive and quite a contrast to the old style shop with its multiplicity of drop cords and glaring lamps.

Some time ago the United States Public Health Service and the Post Office Department ran an elaborate series of tests checking up the question of the effect of different levels of illumination on the speed of sorting mail and found that if a certain speed was obtained under a 3 foot-candle level, by increasing this to 10 foot-candles between 20 to 25 per cent more pieces could be sorted; increasing from 10 to 30 foot-candles a still further increase in speed was obtained. Nearly 40 per cent more pieces could be sorted under 30 foot-candles than under the illumination of 3 foot-candles. There is no question that increased illumination permits clear vision and work can be carried on with less fatigue.

To sum up the question of illumination in home, classroom and industry, it has been proved beyond a doubt that adequate illumination does affect visual acuity; that the foot-candle meter is a proficient means of ascertaining the amount of light present; and that with expert advice it is quite possible to secure illumination which is adequate, proper, and, at the same time, artistic.

With these advantages there is no reason why we may not hope for a growing realization of the necessity for higher standards of illumination, with the result of increased comfort at home, at school, and at work.

## Conserving Vision in the Nursery School and in the Kindergarten\*

Mildred Smith Chambers, R.N.

**J**UST as prevention of blindness in babies is started even before their birth through attention to the health of expectant mothers, so the conservation of vision among school children is started even before they enter school through careful attention to eyes in nurseries and kindergartens.

**I**T IS perfectly understandable and probably has been most satisfactory that in the building of health programs all factors influencing personal health were not given equal consideration during the early, the pioneer, period. Weight, teeth, tonsils, give their evidence in a relatively concrete form. These, then, were the terms we heard most often during the beginnings of public health nursing.

With the remarkable interest and acceptance of the mental hygiene movement some physical factors have gained new importance due to their influence upon mental health. Of these, none shows a more definite relationship than the eye.

When we realize that in the process of body formation before birth, out from that which is to be known as a brain, two parts bud and push forward which are to become eyes, we better understand the definite influence that the eye may and does have upon mental health. Eyes are a part of the nervous system, a forward part of the brain, as it were. Fatigue or irritation in the eye will have an effect upon behavior in the wide variety of ways in which any nerve disturbance may evidence itself. Then, too, the imperfect eye may bring imperfect impressions and distorted mental pic-

\* Presented at the Annual Conference of the National Society for the Prevention of Blindness, November 17, 1930.

tures will be formed; thus wrong conceptions may be gained and kept.

Today it is being more widely appreciated than ever before that all children, because they go through like processes, cannot develop like possibilities and successes. But each child can be, and ultimately will be, given the opportunity to develop the best that is within him physically and mentally. By the "best" we mean not only the ability to accomplish, but the ability to endure. One's period of happiness and usefulness should continue not only into middle life, but through late life as well.

The chance for endurance is largely determined by the foundation laid. Quality of materials will differ, but the wiser the use of any material the greater is the likelihood of satisfaction in the finished structure.

Such statements are so old that they have become trite; it seems a mere filling of space to use them again. Yet in discussion of eye hygiene, of vision conservation, we must even now—and probably will for some time to come—reiterate these old, obvious truths.

The appreciation of the importance of good foundations for health has concentrated attention upon the early periods of life in much of the health work these last few years. As it has been found wise to do this in the general field, so it is in each special field, and in eye work there is no exception. Sight conservation and prevention of blindness are begun with care during the prenatal period. All that is done to develop strength and stability must have its influence upon the eye as well as upon other organs of the body. Treatment against systemic infection may have its very definite result upon vision.

At the time of birth, one of the first considerations is the eye, and prophylactic drops are then instilled.

The newborn, we know, has to learn to see just as he must learn to walk, to talk, etc. At first there is only a consciousness of the difference between light and dark; later the two eyes, if evenly controlled by muscles, and the mind that in turn controls the muscles learn to work in unison—binocular vision is then developed. Even then the eye is not ready for the same type of work that would be suited to the adult eye. There is but little change in the

size of the eyeball, but together with this slight change there is a change in shape, which goes on during the early, formative years. During that period the eyeball is shorter from front to back than is normal for the finished eye, and the condition of hyperopia is present—"farsightedness" is not as good a term to be used in describing this condition, but it is the one better known to most of us.

Whatever term we may use, it is important that we have a partial understanding, at least, of the condition and what that means to the child. The hyperopic eye is not readily adjusted to near work, to fine detail—it is adjusted to the larger objects, to those not too close to the eye. The well meaning parents and teachers of the past, who not only encouraged, but often demanded, sewing and reading of the young child, did their share in allowing good vision to become poor, and poor vision to become poorer.

Today it is somewhat better appreciated that care of vision must be taken while that power is still developing. So it is that attention is being focused upon the pre-school child. Particularly where groups of children are brought together, there is growing concern regarding the environment which will allow them to maintain their best health, the direction of interests which will develop ability without strain, and the survey of physical and mental conditions made, so that as the child enters his more formal period of education he may be understood and therefore helped to make full use of that which we term "education."

The nursery school and kindergarten have the opportunity of doing much for the conservation of vision. Subjects relative to developing abilities and social reactions have been given special consideration in the preparatory courses of those who go into this type of work. Routine is more easily set aside and more individual attention given than is usually possible in the upper grade rooms. Generally there is a better proportion of staff to pupils than in other rooms of the public school. All these are factors which help to make it possible to give and receive very definite, practical help and information in relation to eye hygiene in the nursery schools and kindergartens.

The nursery school as a rule is open to children of 2, 3 and 4 years of age. In this type of school there is a new opportunity to study

children, to learn what may be expected of the average child under normal situations. A vision test here is quite as interesting from the viewpoint of psychological reaction, as is the determination of acuity of vision itself. Through work with faculty members of several nursery schools the value was learned of encouraging children to use both arms in free, definite movements when they are indicating the direction of the symbol exposed during the making of an acuity test.

It is better that a decision be made according to evidence than in order to win approval. We wonder if some of today's politicians, if given an acuity test as children, were not ones to keep their eyes upon the individual making the inspection, cautiously holding a hand in such position that it could be turned to meet approval and again turned if it seemed advantageous. Vision testing, as a process, involves not only physics, chemistry and physiology, but psychology.

In the kindergarten there should be an appreciation of the responsibility of preparing the child to enter school fitted to accomplish his learning easily and well. If it is true—and there seems no denial of it—that 80 per cent of learning is received through the eye, it is extremely important that the condition of the eye be such that true pictures may be readily and easily secured. It seems only reasonable that before entrance into school the state of the eye should be known. To be sure, correction does not always follow even when a defect is definitely diagnosed through medical examination. Yet without that, the child still has been benefited.

The misunderstood child cannot help but become a problem to himself and to others. If it is neither suspected nor known that he is working under a handicap, it is, of course, expected of him to accomplish the same results as the normal child, and with an equally good grace in doing so. To know, or even to suspect, a handicap certainly should mean a better understanding and therefore a more sympathetic and wiser handling of the child.

As in any health problem, eye care presents one in which maintenance of that which is good, prevention of further damage where some has already occurred, and correction of defect, are all to be considered. With an understanding of vision development and

the work involved in the process of seeing, sight conservation before, during and after the school period will be given not only greater, but more practical, consideration than is now generally true.

Intelligent observation of the child's behavior and of the appearance of the eye itself can bring to attention many cases in need of examination and correction. However, individual study of the child is also needed.

For an acuity test we must first secure proper equipment. By "proper" we do not mean expensive. The Snellen E chart seems the one giving the best satisfaction; the child can use it readily and it allows for the same type of record form that will be used in later tests. A good Snellen E chart will be one with accurately sized, sharply defined symbols in dense black, with sufficient space between them.

Artificial illumination is essential so that data secured will not only be accurate, but comparable from time to time. Light directed to one side and to the front of the chart allows an easy use of large cover cards which are used to expose one symbol at a time. Such cards cover all that is not to be seen, thereby concentrating attention on that which is to be seen, which means a saving of time for any age, probably, and certainly avoids confusion with the little child. It has the advantage, too, of somewhat destroying sense of location, thereby making it less easy for the person being tested to memorize.

A 60 watt daylight bulb, backed by an ordinary aluminum painted reflector, will give more than sufficient light for accurate results. The chart should be at approximate eye level. A 20 foot distance between chart and child is desirable; whatever the distance, it should be accurately measured.

Of equal importance with the equipment is the child. The child simply is not present if we have not secured his active interest, therefore his co-operation. Since seeing is a matter of the mind quite as much as of the eye, the mind must be open, ready to receive that which is brought to it. That this is true is often proved during embarrassment, sorrow, anger, during which we may fail to see that which is perfectly apparent normally. The eye under these conditions is still doing its work faithfully and well; it is the mind that is not responding.

Our method and our manner in using that method must be such that the child feels at ease. The adult should adjust to the child, not ask the child to adjust to him. Time is required to acquaint the child thoroughly with that which he is expected to do. Time must be taken to put him at his ease. One child responds to one manner—another to another. In this lies the art of vision testing: the opportunity to observe and carry out points in child psychology.

In making a vision test as part of a health inspection it is an approximation of the normal condition that is being looked for. The nurse and the teacher can know—relatively well, certainly well enough—the signs of health. If, in inspection, some of those signs are absent, we are aware of that absence and refer the child to one who has studied the negative, the physician, to determine whether or not there is a defect, and if so, what should be done. In observing for normality, we think in terms not only of accurate vision, but of easy vision. We are therefore interested in behavior as well as in a correct reading of the symbols. We know the appearance of the healthy eye. If there is variation from that there should be examination to determine the cause. Many serious errors in refraction have been picked up by interest in abnormal appearance of the eye, where acuity, as tested with a chart, seemed perfect. Eyes should function together, that we know. If fusion does not seem good, medical examination should be made.

If sight is poor or is accomplished with difficulty, it is important that either or both should be discovered early. Today that is not difficult; it is a matter of understanding children and of informing ourselves as to what response may be expected during these early years of life.

The question continually arises as to who is to make the vision test; particularly acute is this question where young children are concerned, for at their age time becomes an even greater factor than when older children are being tested.

In the matter of vision testing, we find that in some organizations only the doctors make vision tests as well as eye inspections. In other set-ups the nurse makes the vision test, screening out to the doctor. In still others the teacher screens out to the nurse, the nurse then screening out to the doctor. The latter seems the policy

most in favor, taking the country as a whole at this time. Whoever makes the test needs knowledge of the fundamentals in accurate vision testing and practice in doing so. In questioning ophthalmologists, I have found the consensus of opinion is that knowledge of children rather than knowledge of the eye, is the essential factor in success in securing an accurate acuity test from a young child. To them it seems satisfactory to have the teacher do the preliminary testing, if the official health and education agencies approve, and if the teacher's time is so arranged that she can include such testing as a regular, expected part of her program, not an added duty done under protest.

The pre-school age is one of peculiar interest in the conservation of vision and prevention of blindness. This is not caused by a high percentage of defects, for rather the reverse is true, but because this is an age of rapid growth in which strain may readily occur. To develop ability without strain, to build for endurance, are of prime importance. In these efforts we must not overlook the physical surroundings provided in nursery schools and kindergartens. In addition to the necessity for light-colored walls and ceilings, furniture in dull finish, and proper window shades permitting light but no glare, special attention should be given to the provision of adequate illumination without glare. Today it is quite possible and convenient to secure the services of an illuminating engineer to determine the best lighting arrangement.

The nursery school and kindergarten are in position to aid materially not only in the care of the child's eyes, but in the collection of information regarding the normal eye, and through both these ways to help in the big and important field of conservation of vision and prevention of blindness.

## Contributors to This Issue

**Dr. William H. Luedde** is professor of ophthalmology of the School of Medicine, St. Louis University. For years he has been a member of the Advisory Committee of the National Society for the Prevention of Blindness and a director of prevention of blindness, St. Louis Society for the Blind.

---

As professor of ophthalmology of Harvard Medical School and as surgeon at Massachusetts Eye and Ear Infirmary, **Dr. George S. Derby** has long been interested in social service in eye hospitals, and as a director of the National Society has stimulated interest in co-operative effort in developing such service.

---

**Mr. A. L. Powell** is the manager of the Eastern Office, Nela Park Engineering Department, General Electric Company. As indicated by his recent address before the National Society and by his lighting demonstrations at the lighting laboratory in Harrison, N. J., Mr. Powell is well qualified to tell any one in private, public or industrial life "what's what" about lighting.

---

It is as Miss Mildred Smith, R.N., that **Mrs. Mildred Smith Chambers** is more familiarly known to health departments and kindergartens throughout the United States. Formerly educational agent of the Minnesota State Department of Health, she was appointed director of nursing activities of the National Society in 1928, serving until her marriage, late in 1930.

---

In the social hygiene movement there is perhaps no one better known than **Dr. William F. Snow**, whose name is affiliated with many and varied public health movements. Dr. Snow is general director of the American Social Hygiene Association as well as president of the National Health Council.

---

Among our Book Reviewers: **Dr. William H. Wilmer** is ophthalmologist-in-chief, Johns Hopkins Hospital, Baltimore; **Dr. Park Lewis**, of Buffalo, is vice-president of the International Association for the Prevention of Blindness, as well as of the National Society; **Miss Roma Gans** is assistant in elementary education, Teachers College, Columbia University; **Dr. Colman W. Cutler** is a member of the Board of Directors of the National Society; **Dr. S. H. Monson** is oculist for the sight-saving classes of the Cleveland public schools.

---

Unsigned or initialed articles or book reviews appearing in the SIGHT-SAVING REVIEW are prepared by staff members of the National Society for the Prevention of Blindness.

## Editorials

### The Sight-Saving Review in the War on Blindness

IN OUR relentless war on blindness we are adding one more powerful machine, THE SIGHT-SAVING REVIEW, to our ammunition. For sixteen years as a national organization, and before that for seven years as a state organization, we have tried to leave no effort undone to save sight and reduce the incidence of blindness. The undertaking of a quarterly magazine is a thoroughly considered project, coming as a result of several years of evaluation of the educational needs in the prevention of blindness movement.

For years the *News Letter* has attempted to serve both popular and technical groups. It has gone far afield of its original use to serve as a real news letter to the members of the National Society. In the past few years it has taken on more and more signed articles by experts in the various fields of prevention of blindness. While increasing its service to those definitely engaged in conservation of vision work, however, it has not been found sufficiently adequate for this group, as this SIGHT-SAVING REVIEW is designed to be. This REVIEW, in fact, is designed specifically to meet the needs of state and local prevention of blindness workers, educators, illuminating engineers, school physicians and nurses, safety engineers, public health administrators, industrial physicians and nurses, sight-saving class teachers and supervisors, ophthalmologists, and any one interested in the sociologic aspects of saving sight.

Some of the advantages seen in publishing such information in a quarterly rather than as occasional pamphlets are that: (1) it maintains a continuous interest on the part of the recipient; (2) it provides a diversified education for the recipient, as each issue contains a variety of material; (3) it serves as a developmental education for the reader, since a pamphlet is likely to be regarded as the record of a finished project, while the material in a periodical has the quality of continuity; and (4) it permits of a consecutive filing to form a continuous source of information on the subject.

In considering the usefulness of a new journal, the National Society has not overlooked the importance of a well-rounded editorial board, and is fortunate in securing the volunteer services of men and women eminent in their respective fields. Although a "who's who" is hardly necessary for this group, it is included to indicate the variety of fields the interests of this REVIEW cover:

Mary Beard, R.N., Assistant Director, International Health Division, Rockefeller Foundation

E. V. L. Brown, M.D., Professor of Ophthalmology, Rush Medical College

A. J. Chesley, M.D., Health Commissioner of the State of Minnesota

Charles L. Close, Manager, Bureau of Safety, Sanitation, and Welfare, U. S. Steel Corporation

Gladys Dunlop, Supervisor of Braille and Sight-Saving Classes of Detroit

Mary V. Hun, Chairman, New York State Commission for the Blind

Edward Jackson, M.D., Emeritus Professor of Ophthalmology, School of Medicine, University of Colorado

Albert B. Meredith, Professor of Education, New York University

A. L. Powell, Manager, Eastern Office, Nela Park Engineering Department, General Electric Company

C. O. Sappington, M.D., Director, Industrial Health Division, National Safety Council

William F. Snow, M.D., General Director, American Social Hygiene Association

William H. Wilmer, M.D., Director, Wilmer Ophthalmological Institute, Johns Hopkins University

Thomas D. Wood, M.D., Professor of Health Education, Teachers College, Columbia University

L. H. C.

### The Eye and the Venereal Diseases

Any group interested in the conservation of eyesight must weigh seriously the rôle of the "venereal diseases" in the production of partial or total blindness. Gonococcus infection, in the form of ophthalmia neonatorum, and syphilis, congenital or acquired in later life, each takes its toll in blindness and impaired vision. Probably 15 per cent of all blindness is due to syphilis, and at least another 4 to 5 per cent is the result of gonorrheal infection of the eyes of the newborn. In other words, the venereal diseases are still responsible for practically one out of five cases of total blindness. In addition there are the numerous cases of partially disabling eye conditions due to these diseases. Conservative estimates show that at one time or another in the course of their disease 25 to 35 per cent of syphilitic persons may develop lesions of the eye or its associated nervous mechanisms. Certain groups of the congenital syphilis cases studied have shown an incidence of eye involvement as high as 78 per cent. The most frequent syphilitic lesion, interstitial keratitis, has been found to involve the cornea in as high as 60 per cent of such cases in some studies.

Such facts are not new to most of those specially interested in preventive medicine, and much has been done to bring them to the thoughtful attention of the general public in such a way as to avoid unreasoning fear of these diseases, while stimulating intelligent and sympathetic programs for combating them. Their mere recognition, however, is not a goal, but a basis for further study of how to safeguard human eyesight from these dangers in the future. We have, on the one hand, a group of children just beginning life, handicapped in infancy or in their formative childhood years, doomed by disease and defective eyes to an existence of decreased activity and usefulness, economic and social, or perhaps to complete dependence. On the other hand, we have apparently sound adults in a full career of work and responsibility, unexpectedly barred from continuing these activities because of failing eyesight, due to an undiscovered syphilis, or perhaps the all too frequent result of an inadequately treated old infection.

The efforts of ophthalmologists, the enforcement of laws requiring prophylactic treatment of eyes of the newborn, and the

reporting of cases of ophthalmia by physicians and midwives have done much to reduce the amount of blindness due to gonococcal infection. Among persons admitted to schools for the blind ophthalmia neonatorum as a cause of blindness decreased from an average of 16.5 per cent in the period 1918-1922 to approximately 9.2 per cent in 1930. Sixty per cent of these cases were due to gonorrhea. Similarly early effective treatment of syphilis and prevention of congenital syphilis have doubtless helped to save a great many threatened eyes. Such measures are very important, but in the last analysis the prevention of eye infections due to syphilis or gonorrhea depends largely on reducing the prevalence and opportunities for transmission of these diseases in the general population. So the problem resolves itself into a series of inter-related obligations: (1) On the part of the ophthalmologists to accept leadership in promoting vigilance in detecting syphilis or gonococcus infection as a factor in eye conditions; (2) on the part of the medical profession generally and health officials, to locate and provide medical care for exposed and infected persons; (3) on the part of legal and protective organizations to reduce the number of cases by eliminating environmental and other contributory factors; (4) on the part of educational and religious agencies to diffuse knowledge and build character as long-term factors in this great medical-social battle of preventive medicine.

WILLIAM F. SNOW, M.D.

## National Society Notes

**M**R. LEWIS H. CARRIS, managing director, was in New Orleans, Louisiana, January 15-17, to discuss final plans for the sight-saving courses to be given at Tulane University this summer. Mr. Carris attended the sixty-first annual meeting of the National Education Association in Detroit, Michigan, February 22-26.

\* \* \*

On February 17 Mrs. Winifred Hathaway, associate director, gave a lecture on "Sight-Saving Classes" before physicians and nurses in Bridgeport, Connecticut, under the auspices of the Board of Health. As chairman of the program committee she participated in the meeting of the International Council for the Education of Exceptional Children held in Cleveland February 19-21. Mrs. Hathaway also attended the sixty-first annual meeting of the National Education Association, Detroit, Michigan, February 22-26. As staff member especially interested in the effect of lighting on the eyes, she was named representative on the sectional committee of the Safety Code for the Lighting of School Buildings, of the American Standards Association.

\* \* \*

Recent activities of B. Franklin Royer, M.D., medical director, include a radio talk over station WRNY January 30 on the subject of "Care of the Eyes in Measles." At the invitation of the Department of Health of Syracuse, New York, on February 19, Dr. Royer addressed a group of teachers on sight conservation. In connection with the planning of a Week for the Blind, Dr. Royer was called upon by the Georgia Association for the Blind to assist in prevention of blindness features.

\* \* \*

Miss C. Edith Kerby, statistician, spent January 12-21 in Detroit, Michigan, where she consulted with B. W. Carey, M.D., and others of the Children's Fund of Michigan in reference to records of examinations of rural school children of Newago and Lake Counties, Michigan.

---

Mr. Louis Resnick, director of industrial relations, addressed a meeting of the Delaware Safety Council, Wilmington, Delaware, February 24, on "The Eye Protection and Conservation Phases of the Safety Movement."

\* \* \*

Demonstrations of pre-school eye testing were given by Miss Mary Emma Smith, R.N., director of nursing activities, at the Massachusetts Eye and Ear Infirmary, Boston, Massachusetts. Similar demonstrations were given at Plattsburg, New York, in co-operation with the New York State Commission for the Blind. In addition, plans are on foot for a state-wide program of pre-school eye testing demonstration in co-operation with the Louisiana Society for the Prevention of Blindness.

\* \* \*

Through co-operation of the Press Division of the Foreign Language Information Service, articles prepared by staff members of the National Society have been published in a number of foreign language publications. One dealing with "Eye Hazards in Industrial Occupations" appeared in newspapers published in Finnish, Slovene, Croatian, German, Jewish, Lithuanian, Russian and Ukrainian; one on "Eye Glasses and Eyestrain" appeared in newspapers published in Finnish, German, Italian, Jewish, Russian, Ukrainian, Norwegian and Swedish; and one on "First Aid for Eye Injuries" was published in five different languages. Other articles discussing topics related to conservation of vision were sent out in various languages.

## Note and Comment

**National Society for the Prevention of Blindness in New Quarters.**—In keeping with the advances of its work, the National Society will take up new quarters on April first in the Nelson Towers Building, 450 Seventh Avenue, together with nine other health agencies and a number of welfare organizations. The move was effected by the National Health Council, whose membership consists of: The American Child Health Association; American Heart Association; American Public Health Association; American Social Hygiene Association; National Committee for Mental Hygiene; National Organization for Public Health Nursing; National Society for the Prevention of Blindness; National Tuberculosis Association; and Foundation for Positive Health. The housing of so many agencies with common interests under one roof has resulted, in the past, in economies of expenditures, time and efforts; and added advantages are expected to be secured from this latest venture.

**Annual Meeting of the International Association for Prevention of Blindness.**—In its second year of life now, the International Association for Prevention of Blindness (*L'Association Internationale de Prophylaxie de la Cécité*) continues to grow steadily, though slowly, and gives evidence of its importance as a clearing house of information and as a stimulus to organizations or individuals throughout the world who are devoted to the same cause. Despite a lack of funds and only part-time personnel, the Association has reached out in a number of significant directions from its secretariat, No. 2, Avenue Velasquez, Paris, where the work is carried forward so ably by Dr. F. Humbert, secretary-general, and his assistant, Dr. A. Churchill.

An opportunity to review the Association's activities from both administrative and scientific aspects was afforded at the annual meeting of its Board of Governors at the Palais des Académies in Brussels, Belgium, Oct. 10, 1930. The American National Society for the Prevention of Blindness was represented by Mr. Lewis H.

Carris, managing director, who is also the United States correspondent of the International Association. The chairman of the meeting was Prof. F. de Lapersonne, the president.

Among others in attendance were representatives of the League of Nations, Dr. Pantaleoni and Dr. Josephus Jitta; representatives of the International Ophthalmological Congress, Prof. Van der Hoeve, president, and Dr. Marx, secretary; the secretary-general of the International League Against Trachoma, Dr. Wibaut; and the president of the All India Blind Relief Association, Mr. C. J. Henderson. Because of the concurrent meeting of the League of Red Cross Societies, a number of national Red Cross bodies sent delegates. Three instances of valuable co-operation with other organizations interested in conservation of vision were related by Prof. de Lapersonne in his address. These are:

(1) Collaboration with the Child Welfare Committee of the League of Nations in preparation of a report on sight-saving classes. Dr. Humbert, who is a member of this committee as the official representative of the League of Red Cross Societies, in which he is chief of the Health Section, will prepare the report.

(2) Assistance to the General Committee of French Insurance Companies in an investigation of the causes of industrial eye diseases and eye accidents in factories throughout France. The study was made by Prof. de Lapersonne over a period of six months and includes statistics gathered in 2,000 French plants.

(3) Co-operation with the International League Against Trachoma in the universal search for the causative factor of this disease. Liaison is through Dr. Humbert and Dr. Park Lewis, vice-president of the Association for Prevention of Blindness, who are members of the League Against Trachoma.

Acknowledging the aid received by the Association from various quarters, Prof. de Lapersonne said: "We have been endeavoring to find people who are in sympathy with our work and who might help us. Indeed, many such people have spontaneously come to us, and we have been deeply moved by the tokens of approval and of support which we have received from different countries. I wish to make special mention of the valuable help which the National Society for the Prevention of Blindness of the United States has constantly given us. We beg its eminent representative, Mr. Lewis

H. Carris, who has come to Europe to attend our meeting, to express to his colleagues our sincere gratitude. During this difficult period of organization, the League of Red Cross Societies has given us a hospitality which we appreciate more and more every day."

On the basis of official census figures, said Prof. de Lapersonne, there are 2,500,000 blind people in the world, but that wherever careful inquiries have been made these figures have had to be doubled; thus, the correct number is approximately 5,000,000. The blind population of China, alone, is at least 500,000, with a population of about 5,000,000 who are blind in one eye. The situation in India is equally depressing; according to data collected by the All India Blind Relief Association, there are 1,500,000 totally blind persons and approximately 2,500,000 persons whose sight is seriously impaired.

In his report as secretary-general, Dr. Humbert stressed the vital need for extensive propaganda throughout the world as a means of bringing into existence separate bodies to engage in the special work of conserving vision. "With a few striking exceptions, as in the case of the United States," he said, "the prevention of blindness is nowhere represented by autonomous organizations. Propaganda, in a word, is the very heart of our problem. It is the idea on which I wish to close this statement."

The Association was formed at The Hague (Scheveningen) Sept. 14, 1929, on the eve of a world-wide economic crisis, Dr. Humbert pointed out, and it has therefore met with unforeseen financial obstacles. The Association is awaiting a more opportune time before addressing a widespread appeal for funds. The income from February, 1929, when the first contributions were accepted, until September 30, 1930, amounted to \$2,445.87; the expenditures amounted to \$2,397.28. "If one takes into account the hospitality given by the League of Red Cross Societies in its building in Paris and the personnel service rendered by staff members of the League and of the American National Society for the Prevention of Blindness, these figures would be three times higher," said Dr. Humbert.

After extending good wishes from America, Mr. Carris outlined the experience of workers for prevention of blindness in the United

States during the last twenty years. He stated that the American Society was pleased to place at the disposal of the International Association such technical assistance as it possessed.

Other addresses were made by Mr. Henderson, of the All India Blind Relief Association; Mr. Milsom, of the League of Red Cross Societies; and Dr. Lossouarn, vice-president of the League for the Prevention of Blindness in China. Mr. Milsom discussed plans for public education on care of the eyes through the medium of the 12,000,000 members of the Junior Red Cross in countries throughout the world. Mr. Henderson sketched the tremendous task that is waiting to be done in India, and Dr. Lossouarn drew a dark picture for China.

**Hiram Woods, 1857-1931.**—Word has been received of the death of Hiram Woods, M.D., of Baltimore, Maryland, January 15. Dr. Woods was active in work for the prevention of blindness long before the formal organization of the National Society and was a director of the Society since its beginning. He was for many years vice-president of the Maryland Society for the Prevention of Blindness and took a leading part in its activities. In tribute to their old associate and friend, the Executive Committee of the National Society for the Prevention of Blindness passed the following resolution:

"Today the National Society for the Prevention of Blindness, in executive session, pays tribute to one of its founders, Dr. Hiram Woods, who on January 15, 1931, after a long career of usefulness and inspiration, stepped over the threshold of life.

"When in 1909 Maryland, following the example of New York, established a Society for the Prevention of Blindness, it was without question that Hiram Woods, a man in the prime of life, even then an ophthalmologist of wide repute, should be one of its most active participants.

"In 1910, when the necessity of a national organization became evident, Hiram Woods, because of his experience, was appointed one of the committee which brought into existence the American Association for the Conservation of Vision, which, in 1915, was federated with the New York State Committee for the Prevention of Blindness to form the present national organization. Since the new body needed a strong, virile governing board, Hiram Woods

was made a director, not only because of his experience, but because he combined with the attributes of a gracious, Southern gentleman a fearlessness in saying what he thought and in acting what he felt.

"With head held high and shoulders erect, Hiram Woods marched forward. The National Society is grateful for the heritage of his good works."

**Revised Industrial Lighting Code.**—A revised "Code for Lighting Factories, Mills, and Other Work Places" has been approved by the American Standards Association, following its approval by the Illuminating Engineering Society. The code is intended as a guide for factory owners and operators in their efforts to improve lighting conditions in their factories, and also as a source of authoritative information for bodies preparing safety regulations. It contains sections on measurement of illumination, recommended levels of illumination, avoidance of glare, specifications of adequate wiring, locating switches, and a suggested minimum regulation to be established by state authorities.

**First Windowless Factory Building.**—Industry's first windowless factory building, entirely without daylight and embodying radically advanced ideas for the scientific creation of ideal light and other working conditions for employees, is to be constructed by the Simonds Saw and Steel Company, Fitchburg, Mass. The structure will cover nearly two city blocks and will have solid walls and roof punctuated by neither windows nor skylights. Elaborate systems will be installed for lighting, ventilation, and noise absorption through acoustical walls and ceilings and other means.

Plans for the plant are the result of exhaustive research accomplished with the aid of every resource of modern science. Biological and psychological studies have been made to determine the effects upon human efficiency of such factors of workshop environment as light, temperature, sounds, and color. One of the many innovations resulting from these studies will be orange-colored paint for the machines, to lift their visibility and help reduce accidents. Walls and ceiling will be blue, green and white. The lighting system will be arranged to supply ultra-violet rays.

The company's aim is to surround its workmen with conditions

found to be most ideally conducive to safety and health and to freedom from fatigue and nervous strain, with consequent better production. Experiments conducted by the company have indicated that an increase in efficiency by as much as 33 per cent may result from the new methods.

Illumination of the great building, with its five acres of floor space, will be accomplished by hundreds of 1,000 watt lamps. The lighting system will provide uniform light intensity, not possible in daylight factories dependent upon the cleanliness of windows or upon changing conditions of the weather.

In order to combat distracting noises in the plant, all heavy machines and drop hammers are to rest on cork pads isolated from the remainder of the floor. All air in the building will be changed every ten minutes.

**Intensive Campaign Against Industrial Injuries.**—The employment and safety director of the Reed and Prince Manufacturing Company, of Worcester, Massachusetts, reports on the accident prevention program adopted to eliminate eye injuries and back strains at the plant. A committee was formed to hold hearings on all eye accidents that required the services of a doctor, the safety engineer being appointed to investigate the minor injuries and to follow them up. The accident was discussed, the cause was ascertained, the responsibility for the accident placed, and measures adopted to prevent a recurrence. From these hearings came the following information as to causes of eye injuries: grinding without goggles; failure to keep out of line with cutting tools; failure to keep out of line when kicking on belt; failure to wear goggles while standing near grinding wheel; bringing face close to cutting tools without wearing goggles; failure to turn head when passing grinding wheel in use; allowing steel chips to accumulate around belt; rubbing eyes with dirty hands; failure to be careful when shaking steel chips out of rags; failure to protect other employees' eyes in the course of work. Employees were requested to wear goggles continually.

## Current Articles of Interest

**The Industrial Nurse in Gear with the Machinery for Human Adjustment**, Violet H. Hodgson, R.N., *American Journal of Public Health*, December, 1930, published monthly by the American Public Health Association, New York. Discusses the counterpart situations in the machinery for human adjustment which result in a lessening of production and efficiency in helping the individual to make a satisfactory adaptation to his environment—loss of time in reporting problems to other agencies; unwillingness to co-operate, resulting in a clashing of interests; neglect of the routine procedures of reporting, which are the mechanics of co-operation; and unco-ordinated objectives. Co-ordination and proper sequence of all the gears in the community health machinery are essential in order to attain the maximum speed in making productive human adjustments with a minimum of friction and lost effort. The industrial nurse has a very real contribution to make to this process within and outside the plant, if she is “timed” to perform her part in “proper sequence” with all the other agencies.

**The Blind Pensioners of Illinois**, William H. Wilder, M.D., F.A.C.S., and Audrey M. Hayden, A.B., *American Journal of Ophthalmology*, January, 1931, published monthly by the Ophthalmic Publishing Company, Menasha, Wisconsin. Tables are given to show the causes of blindness among those on the blind pension roll of Illinois. The most prominent parts are played by opacities of the cornea, cataract, glaucoma, affections of the optic nerve, and trauma. The authors advocate a central commission for the blind in every state, such a commission to see that all applicants for the pension are properly examined by competent oculists, and the findings recorded. The examiner should be a man of approved skill holding the certificate of the American Board for Ophthalmic Examinations.

**On Correlation of Glaucoma, Sex and Age**, K. I. Tsykulyenko, abstracted in the *American Journal of Ophthalmology*, January, 1931, published monthly by the Ophthalmic Publishing Company, Menasha, Wisconsin. Of the 60,977 patients treated in the Eye

Hospital of Odessa from 1904 to 1928, 1.54 per cent were affected with glaucoma. The frequency of glaucoma among women was 2.04 per cent and among men 1.06 per cent. The incidence of glaucoma among eye patients was prevalent between 40 and 70 years.

**Conserving Industry's Eyesight**, Don M. Campbell, M.D., L.R.C.S.(Edin.), *National Safety News*, December, 1930, published monthly by the National Safety Council, Chicago, Illinois. A program outlined for an industrial organization for prevention of eye accidents. The physical examiner takes the visual acuity of every prospective employee. Those with subnormal vision are put through a more thorough examination, including a history of eye defects, dark room examination, focal illumination, ophthalmoscopic examination, and refraction.

The result of such a procedure naturally places the applicants for employment in three main groups: First, those who have physical eye defects, such as scars on the cornea, cataracts, or some organic disease of the retina, choroid, or optic nerve. These men cannot be helped with glasses and cannot be employed. Second, those who have poor vision from birth, and whose eye condition cannot be cured, or whose vision cannot be brought up to the required standard by glasses. Third, those whose vision can be raised to, or in most cases above, the required standard by properly fitted glasses. To these is offered the opportunity of getting the needed glasses. They go to their work equipped to do it efficiently and safely.

A price is made to the job seekers for medical services and glasses; for that price the worker receives a complete diagnosis of refractive and eye condition by a trained eye doctor, and a pair of glasses carefully fitted.

## Book Reviews

AFFECTIONS OF THE EYE IN GENERAL PRACTICE. By R. Lindsay Rea, M.D., F.R.C.S. Philadelphia: Lea & Febiger, 1930. 155 p.

The dedication of this volume to the general practitioner indicates its purpose and awakens an immediate interest.

The first seven chapters are devoted to the affections of the appendages of the eye and to the ocular structures themselves. Chapters are given on the subjects of refraction, squint, injuries, cataract and lesions of the orbit, respectively; one division is devoted to the eye in its relation to diseases of the nervous system, and another to the value of ocular symptoms in localizing lesions of the brain. The final chapter treats of the hygiene of the eyes from before birth to old age. This chapter is followed by a list of useful prescriptions of ointments, collyria, general tonics, etc.

The book contains 7 colored plates and 133 illustrations in black; but, together with the majority of small medical books, it suffers somewhat from its very brevity. For instance, not quite sufficient explanation has been given to the need of general hygiene and to the relation of tuberculosis to phlyctenular keratitis. Many observers of great experience will not agree with the author in the worthlessness of vaccines in gonorrheal conjunctivitis.

This book is not without a sense of humor in advising the student not to attempt to recognize the changes in the optic disk or in the pupil of an artificial eye. The reviewer has seen this attempted many times to the confusion of the student.

The small volume covers much ground in very little space and it should be of particular help to ophthalmic nurses. On the whole, the book accomplishes well its purpose of aiding the general physician and of affording quick reference for students of ophthalmology.

WILLIAM H. WILMER, M.D.

IS IT SAFE TO WORK?—A STUDY OF INDUSTRIAL ACCIDENTS. By Edison L. Bowers. New York: Houghton Mifflin Co., 1930. 225 p.

This book is essentially an analysis of workmen's compensation practices here and abroad and of their influence or failure to influence accident prevention.

Why is it, the author asks, that we, who have such a hatred for war, condone a continual battlefield in industry where the casualties exceed those of war? Why must so many workers be killed and injured when reliable authorities agree that 75 per cent or more of all accidents could be avoided? The answer, he says, lies chiefly in two facts: (1) that our workmen's compensation system is based on guesses rather than on facts; and (2) that our system of compensating injured workmen, and the dependents of industrial workers killed in accidents, fails to recognize adequately the value of the worker.

"Our thinking on injury prevention," Mr. Bowers points out, "has been colored by machine guards, safety bells and stop signs. These are only the visible tools by means of which the work is performed. The real motive power is the willingness to provide the tools. The engineering and educational ability is not lacking. It can effectively reduce the human hazards of industry if only given a chance. This opportunity, in some cases, has come at the employer's request; in others, compulsion seems necessary. This compulsion can be exercised by the state, by virtue of the fact that it determines compensation policies. If the government would move industry to practice safety, it must speak the language of industry. It must make its appeal felt from a business standpoint. That is, it must make the issue a financial one, expressed through the medium of costs. In short, safety must be made the counterpart of savings, and industrial casualties the cause of business losses."

The book is worthy of the attention of anyone seriously concerned with accident prevention, even though it does not fulfill the promise of its intriguing title and though the author falls into the common error of assuming that as soon as industry is thoroughly convinced that accident prevention pays it will proceed to do all that it can do to prevent accidents.

L. R.

LE TRACHÔME CONJONCTIVITE GRANULEUSE. By V. Morax and P. J. Petit. Paris: Jean Morax, 1929. 382 p.

This volume is well printed on good paper and illustrated by 5 unusually good plates in color, and 85 figures throughout the text. The senior author is an eminent ophthalmologist and the work appears most opportunely.

Among the special subjects considered at the International Congress of Ophthalmologists held at Amsterdam and the Hague in 1929, none received more consideration than trachoma. This is a pernicious form of granulation of the lining membrane of the eyelids and is one of the most common causes of defective sight and blindness throughout the world. The reports made at that time by De Grosz of Hungary, Maggiore of Italy, and others showed such a widespread incidence of this disease not only on the continent of Europe but even to a greater degree throughout Asia and Africa that, following the Congress, representatives of twenty-eight nations met and formed an organization for the control of this pestilence. Since then, two exceedingly valuable works have appeared, one by Cuénod and Natif of Tunis, where fifty per cent of the native population is affected, and the present volume. France has been particularly concerned with this disease as it has been so widely prevalent since the World War, both at home and in the colonies, that a League has been formed for its study and co-ordinated efforts are being made for its control. In all of these movements Professor Morax has been an active and efficient leader. From his wide experience and close observation he is enabled to speak with authority.

The authors very properly begin by giving an exact definition, as far as it can be given, of the disease. "We designate," they say, "by the term 'trachoma' or 'granular conjunctivitis,' a disease affecting the ocular mucous (or lining) membranes, extending to the cornea, the transparent front of the eyeball, and resulting in cicatricial changes." Experimentation confirms clinical observations that it is an infectious disease, transmissible in man and under special conditions to certain species of animals. The term coming from the Greek means a "roughness" which is produced on the inner tarsal surface, causing elevated excrescences. It seriously affects the sight by developing vascular alterations in the cornea

(pannus), incurving of the cartilaginous part of the lids, inturning of the lashes, etc. It is of slow progress and is resistant to treatment, taking months and even years before complete recovery can be effected and recurrences even then are frequent. These are the essential elements of diagnosis as up to the present time a specific pathological agent has not been isolated and there is no diagnostic serum that may be employed.

Following MacCallan, who had wide experience with trachoma in Egypt, the disease is divided into four grades determined by the stage to which it has advanced. It frequently passes unrecognized in infants, one or both of whose parents are affected. It not rarely happens that the child contracts one of the commoner conjunctival infections, and the mucous secretion leading to an examination discloses side by side with this infection a beginning trachoma. A period of incubation after the infection lasts from 7 to 10 days before evidence of the disease can be discovered. The earlier symptoms are those common to conjunctival inflammations, of moderate dread of light, feeling as of some foreign body in the eye and excessive flow of tears. Whenever irritative phenomena are present such as swelling of the lids, gumming of their edges, pain with a thick mucous or purulent discharge, a superimposed infection due to the Koch-Weeks' bacillus, the gonococcus or some other micro-organism will be found present.

The authors lay great stress on the methods of examining the eyes to find the trachomatous granulations. They are most commonly located, especially in beginning cases, in the retrotarsal folds. These are not exposed by merely inverting the lids, but with the eye turned downward as far as possible a Demarres elevator or a strabismus hook may be pressed on the upper portion of the everted lid and the entire fold thus brought into view. With thickened lids and sensitive eyes this is by no means always easy of execution and a few drops of a solution of cocaine hydrochloride or a subcutaneous injection of novocaine will greatly facilitate the operation. The authors discuss the difference in diagnosis in the various forms liable to be confused with trachoma—such as spring catarrh, acute and chronic folliculitis, conjunctivitis of the newborn with Prowazek inclusions, school and toxic folliculitis and that having a lacrimal, tuberculous or syphilitic origin.

Various serological diagnostic measures have been tried, but none with sufficient success to be generally accepted. Much care has been given to the subject of treatment. This is considered according to chemical, physical, biological, and mechanical methods, and by inoculation of virulent substances or substances causing inflammation. The operative measures are given very completely. Grattage is not condemned as vigorously as it has been by some of the Italian writers. From a medical point of view the chapter on pathological anatomy will be of value.

A most interesting chapter is that on the origin of the disease.

The early statistics of Swan M. Burnett would indicate that the Negro in America is relatively immune, but it is common to the race in Constantinople and is exceedingly prevalent among the blacks in Northeastern Africa. No distinctions are noted of susceptibility of sex or race or because of meteorological conditions. It is a well observed fact that trachoma prevails where opportunities exist for its diffusion. It is a contagious malady, and without our knowledge of how it is propagated it goes everywhere and is founded on lack of cleanliness, neglect of individual and collective hygiene and an absence of those precautions that would prevent contagion, such as the common use of toilet articles and the failure to disinfect the hands by frequent washing. Promiscuity also favors the development of trachoma because individuals are brought more closely in contact under the worst hygienic conditions. Many authors have noted the fact that the disease is found in its most aggravated form among those who spend most of their time within doors while the proportion is relatively small among those who lead an outside life even while living in the same house. This is also true of those in the barracks of soldiers as well as of workmen gathered under the same roof. Aside from the fact of crowding the element of contagion is a prime factor.

In the countries in which trachoma prevails children are almost always infected before arriving at school age. Almost invariably when a young child is found with trachomatous eyes some of the near relatives will also be found to be affected.

The customs common in many countries make contagion easily effected. Among the Arabs the application of kohl to the eyelids which is drawn along the lashes readily carries the infection when,

as frequently happens, the same substance is used on the lids of the child. In certain instances trachoma is transported *en masse*, when populations are transferred from localities in which it is prevalent to regions in which it had been infrequent or absent before. This has been specially noted in Argentina, in Syria and in sections of Western Africa.

The authors very properly urge an organized effort to prevent the transfer of trachoma across boundary lines. Such regulations are up to the present far too limited.

A complete résumé of the experimental researches that have been made on the lower animals with a view of segregating the infective element leads to the conclusion that the *Bacterium granulosis*, a micro-organism not recognized before the studies of Noguchi, does not constitute the specific agent in the transmission of the disease.

Historically the subject is of great interest. Humanity has been a victim of this disease from the most ancient times. It was known to the Greeks; Herodotus, fifth century B. C., says that soldiers were withdrawn at Thermopylae because of it. Aristophanes refers to it in "The Frogs." Hippocrates recognized it, and Paul suffered from it. Among the Romans, Cicero, Horace and Pliny the Younger all were trachomatous and down through the ages frequent references are made to it. The sanitary history of Napoleon's campaigns as affecting ophthalmia is most instructive. He took 35,000 men into Egypt, sanitary regulations of today then being unknown. At Cairo an acute epidemic of pest and dysentery carried off large numbers of soldiers. Ophthalmia also appeared. It did not seem to be severe and almost ceased but at Alexandria it reappeared with new intensity and 3,000 men were attacked. Before long two-thirds of the troops became affected and an ophthalmic hospital was established at Cairo. The English, Italian and Prussian armies suffered even more. Wherever the troops went—Malta, Sicily, Gibraltar, Portugal, Spain—the contagion was carried. In Great Britain it was most severe. In one regiment of 700 men in a single year 636 were attacked. On the Baltic were infected centers. After the battle of Waterloo it appeared to cease but in 1818 it reappeared with renewed virulence. In 1823 it had extensively invaded Russia. Up to the fifteenth

century there is reason to believe that Egypt was no more generally infected than other countries on the Mediterranean littoral. It was widely spread without doubt by the knights returning from the various crusades. Today its existence is so extensive in various parts of the world that its control becomes not only a humanitarian but an economic necessity. In Egypt in 63 nursing children Morax found 14, or 22 per cent, with trachoma and his investigations warranted the conclusion that 93 per cent of the inhabitants were affected.

Howard, who lived many years in China, concluded that trachoma in that country caused greater economic losses than famine and flood combined. In a single village in Japan 91 per cent of the inhabitants were trachomatous. De Grosz has shown that Hungary is the first country that has made a methodic effort to control this disease.

Especially important are the authors' suggestions in regard to prophylaxis. Measures to be employed in the home, in the school, in the army and in other places where numbers are gathered together demand organized supervision together with the legislative measures that should be enacted. The chapter on "Prevention" is equally valuable.

The wide experience of the writers, the accumulation of careful observations together with their judicious advice as to protective and curative measures make this work one of the most valuable contributions that has appeared on this important subject.

PARK LEWIS, M.D.

TEACHING THE CHILD TO READ. By Samuel W. Patterson. New York: Doubleday, Doran, 1930. 524 p.

To those interested in the conservation of eyesight, a book on the elements of reading is important. Of special interest to them would be the chapter on "The Physiological Aspect of the Reading Process," and "The Hygienic Implications of the Physio-Psychological Aspects of the Reading Process." According to an inscription on the cover jacket, this volume, however, is "designed for basal use in teacher training institutions," and as such, falls somewhat short of expectation. There is a great need for a book

on the teaching of reading written expressly for the students in teacher training schools. One realizes the need for an effective presentation of the subject when one considers the large number of teachers who are being prepared to teach and who, for the next several decades, will influence and control the teaching of children to read.

This book, judged from the various aspects upon which the author touches, should be a comprehensive treatment of the subject. The hygienic aspects of reading, the general classroom conditions influencing the reader, and the importance of a meaningful background are topics which are frequently overlooked in a treatise on the subject of reading, but are included in Patterson's work. Stenographic reports of lessons illustrating procedures which are previously described are included and carefully planned exercises for students, designed to extend their study and research of the subject, follow each chapter. An extensive bibliography composed of several hundred titles on reading and on education in general is a commendable feature of the book. The bibliography is essential to the successful use of the exercises following the chapters.

While the general plan of the book is desirable, the author's treatment of the subject is not equally so. In his attempt to write simply enough for his student readers in teacher training institutions, he has resorted to generalities which diminish the usefulness of the volume. As example, on a topic as important as posture in reading, only an eight line discussion is given, concluding with: "Standing posture during oral reading should receive the consideration it deserves for it has a direct effect upon the pupils' speech." This is the only reference made to "standing posture" and to its relation to "speech." Such important topics as phonics, when to begin reading, and the pupils' social background, are similarly treated in an indefinite fashion.

Excellent ideas are stated but are not sufficiently elaborated to carry much significance to the reader. For example, reference is made to Dewey's statement concerning the postponement of beginning reading until the child is at least eight years of age. The author calls attention to this opinion of Dewey, but does not go into some of the major implications of this much mooted question.

Although "Teaching the Child to Read" is an attempt to show the principles underlying acceptable method, it is to be regretted, since it was written particularly for the teacher in training, that it is not more definite in its suggestions.

ROMA GANS

TRANSACTIONS OF THE INTERNATIONAL OPHTHALMOLOGICAL CONGRESS, HOLLAND, 1929. 4 vol.

The Thirteenth International Congress of Ophthalmologists was held at Amsterdam in September, 1929. It was the first international congress since the meeting held at Naples in 1909. The Twelfth Congress had been planned for 1914 at Petrograd, but the War intervened.

This memorable reunion of ophthalmologists was in response to a feeling that by a closer accord among scientific men an important contribution might be made to international friendship. This aim and its accomplishment are shown by the addresses of the President, Professor Van der Hoeve, and especially by the eloquent replies, among many others, of Treacher Collins, of London, and of Professor Axenfeld, of Freiburg, one of the most distinguished of the German colleagues, whose recent death has saddened all who knew and worked with him.

The Transactions of the Congress comprise four large volumes, from which it is possible to select but a few subjects for our present consideration.

The first volume contains clinical reports from many lands and in various tongues. In "Studies in Ocular Fatigue; Fatigue of Accommodation," by Dr. Conrad Berens and Elizabeth Stark, a tribute is paid to the untiring energy of Dr. Lucien Howe, who devised the accommodation convergence ergograph. A later paper by the same authors reaches the conclusion that accommodation is difficult to fatigue. Lancaster and Williams have found that "with continuous or sustained effort, the near point came steadily nearer, until in 10 or 15 minutes it was 50 per cent nearer than at the start (a phenomenon of viscosity). This seems to fit into the theory of accommodation advocated by Tscherning and others rather than that of Helmholtz and Hess and others."

"The Refraction Curve in the U. S. A., with Special Reference to Changes in the First Two Decades," by E. V. L. Brown and F. C. Kronfeld, of Chicago, is a contribution to a subject which is of general interest and is based on the study of 20,000 eyes, 42 per cent of which were thoroughly under atropin. In order to avoid extremes, cases between 8 D. hypermetropia and 6 D. myopia were chosen for the graph. This excludes so-called progressive or malignant myopia and offers a fair estimate of the refraction of school children.

The most common refraction is plus 1.00 D., but there is more progression toward the myopic side in the eyes of school children than anyone is conscious of at this time. The authors do not draw any conclusion as to the cause of this progression. According to their curves, it increases gradually from the age of seven to fourteen. After fourteen it drops almost suddenly, but shows a second rise from eighteen to twenty. They conclude that it is not due to work done at school, as this becomes more intense from twelve on, while the tendency to myopia is noticeably less; nor is it a pathological process, but rather "a growth phenomenon which practically every eye shows."

"Amblyopia in Squint," by Dr. Luther C. Peter, of Philadelphia, is a debatable subject presented in a manner which will be convincing to those who have held the views of Claud Worth of some years ago. Dr. Peter presents, with much else that is interesting, evidence regarding the transference of amblyopia to a covered eye and the restoration of normal vision in the formerly squinting eye. There is usually a small, relative scotoma in the squinting and amblyopic eye. Dr. Peter does not state whether the scotoma disappears after the improvement under orthoptic training, nor does he give the details of the treatment except to state that it is confined to an occlusive bandage. Concerning the cause of squint, after eliminating as contributing but not constant factors, accommodation, hypermetropia, muscular anomalies, fright, acute illness, etc., heredity, there is left only the inability of the eyes to fuse two objects into one, a defect of the "fusion faculty." The writer believes "that amblyopia can be prevented in a majority of young patients and that suitable training will restore normal or nearly normal vision in a majority of patients under seven, and that

improvement can be expected in much older patients." It is obvious that early treatment offers the best prospect of success and that the utmost co-operation among all concerned is needed.

One of the most striking contributions to the Congress was that of Professor J. Gonin, of Lausanne. It has been recognized that detachment of the retina is one of the diseases of the eye least amenable to treatment and most discouraging in its prognosis. For ten years Professor Gonin had demonstrated his method, but here the consensus of opinion was so general and the discussion so illuminating and favorable, that Gonin's method takes a place with the operations of Elliot and Lagrange which have saved many eyes afflicted with glaucoma, as a long stride in the road towards the conquest of blindness.

Professor Gonin's paper was entitled, "*Le Traitement Local du Décollement Retinien.*" Space does not permit the quotation of his lucid and convincing words. The principle rests on the discovery of a tear in the retina, which may be difficult, but the tear or rupture is believed by Gonin to be always present, and is the cause of the detachment, in that it permits the vitreous to pass into the retro-retinal space. When the rupture has been localized by the ophthalmoscope, a small thermocautery is passed through the sclera and the scar thus formed closes the rupture and the retina is attached to the choroid. His observations may be summed up as follows: (1) In all cases of recent detachment where the closure of the tear or tears has been accomplished with certainty, the cure has been immediate and complete without the intervention of any other treatment. (2) In every case where the detachment persists, a careful search has shown that the tear which had been seen had not been closed by the cautery, or that there existed another tear not previously recognized. (3) In a few cases where there has been a relapse, the explanation has been found in the formation of a new tear or rupture.

An extensive article by Dr. Arruga of Barcelona, with excellent colored plates showing the existence of tears in different parts of the retina, and the scars after their closure, adds weight to Professor Gonin's statement.

With regard to the extraction of cataract, the tendency of the Congress, as shown by numerous opinions, was toward extraction

in the capsule as the operation of the future. Professor Elschmig (Prague) sums up from a large experience, and after having tried the Smith method of extraction in the capsule and the suction method of Barraquer of Barcelona, he has for the past four years practiced a method known as the Stanculeanu-Knapp operation, with which results are better as regards the welfare of the eye and ultimate vision.

It would be very interesting to give abstracts of the numerous papers on glaucoma. In addition to numerous contributions on operative variations, all tending toward an establishment of the filtration principle with minor modifications of the Elliot-Lagrange technique, an especial section was devoted to the pathology and medical treatment of the disease. Magitot (Paris) indicates many factors, constitutional, toxic, chemical, nervous, all acting as possible causes of edema (which is a condition itself requiring definition), and reaches the obvious conclusion that glaucoma is a symptom of a general disease, a sick eye in a sick body, as Lagrange has said. The treatment of the general cause must be regarded as a large medical problem. Operation is indicated only in acute or in painful glaucoma, the author states. Later, in discussion of the subject it was emphasized that precious time should not be lost by palliative or medical treatment where the optic nerve was suffering through the continuous or intermittent tension.

S. Hagen (Oslo) treats with commendable clarity the mechanics of tension. The relation between the channel of escape and the variations in the contents of the eye, either through the filling of the intra-ocular blood vessels or the other fluid contents of the eye, and the influences that may affect these relations, are studied by a series of daily tension curves, the observations based on tension taken during day and night, under the influence of myotics, also of adrenalin, to which is given an especial value attributable to its contractile action on the vessels and a diminished secretion of aqueous humor, due, according to Seidel, to a toxic action on the ciliary epithelium.

From the clinical standpoint the pathogenesis of glaucoma is not to be explained by any single theory. It is hoped by the author that the experience of recent years, as regards significance of the sympathetic nervous system, the relation of certain hormones and

other substances produced by the body on the ocular tension, may in this manner (that is, by the study of constant tension curves) be productive of some result.

This subject, "The Etiology and Non-Operative Treatment of Glaucoma," is continued by W. S. Duke-Elder (London) in a scholarly study of the physiological bases of the problem, of which the pathological processes are merely aberrations. Such an essay does not lend itself to an abstract in this place, but the work that is being done is immensely stimulating. The author's final conclusion is: "Surgical treatment is merely palliative of the symptoms of tension and does not cure the disease; but in our present ignorance of the ultimate etiology, medical treatment, although it can do much, cannot yet justifiably replace it in the majority of cases."

In the final paper in this symposium on glaucoma, by Professor K. Wessely (Munich), the pendulum swings to the clinical side, and after a discussion of various myotics and their action, and of several of the newer remedies such as glaucosan and adrenalin he states, "The modern efforts for the extension of the medicamental therapy of glaucoma, though perfectly justifiable in themselves, may on no account oust our operative experiences and successes, nor may they, by increasing the patient's fear for an operation, or by rating the doctor's responsibility for the operation too high, cause the right moment for promising operative intervention to pass by unutilized, as is but too often the case when myotics have been used too long. For such neglect would have one of the most serious consequences which we must keep in mind in discussing our subject."

A separate section, somewhat extensive but not conclusive, is devoted to trachoma and will be reviewed in a later issue of THE SIGHT-SAVING REVIEW, as will also certain reports on the standardization of visual examination, perimetry and color tests.

COLMAN W. CUTLER, M.D.

TEN YEARS OF WORLD CO-OPERATION. Foreword by Sir Eric Drummond. League of Nations, 1930. 467 p.

The Health Organization of the League of Nations is interested in the various phases of prevention of blindness which have an international aspect. Among other things, the Health Organization has issued a report on trachoma by Dr. Josephus Jitta and Dr. Albert Lutrario. In "Ten Years of World Co-operation," a comprehensive volume just published by the League Secretariat in Geneva, it is pointed out that trachoma "is of considerable significance from an international standpoint, because of the world-wide distribution and because of the restrictive measures against immigration which some countries have been obliged to take on that account." The summary of the League's activities also refers to the study on the welfare of the blind and the prevention of blindness made in 1928.

D. R.

YOUR VISION AND HOW TO KEEP IT. By H. G. Merrill and L. W. Oakes. New York: Putnam & Company, 1930. 145 p.

This is written in a simple direct style, primarily for teachers and nurses and those of the laity who may be interested in the general care of the eyes. The underlying anatomical facts are given in an interesting and easily understood manner and there are several simple diagrams.

The commoner diseases of the conjunctiva, cornea and iris, as well as those of the lens, choroid and retina, are explained, avoiding as far as possible technical terms. The early treatment of crossed-eyes is given special attention. Why we need glasses and their proper adjustment is taken up in detail and there is an excellent account of the effect of various drugs and poisons upon the eyes. The various theories of color-blindness are also discussed.

This book will be of value to any one interested in the care of the eyes and is especially recommended to teachers who have charge of sight-saving classes.

S. H. MONSON, M.D.

### Briefer Comment

CAN WE GET RESULTS FROM EYE-STRAINING TYPOGRAPHY? Douglas C. McMurtrie. Chicago: Ludlow Typograph Company, 1929. 18 pages. Essentially prepared for advice to advertisers through printing. Author presents briefly the arguments for eliminating the use of six and eight point type no matter how carefully arranged, in deference to ten, twelve, and fourteen point type, which has been proven to be more legible and more quickly picked up by the eye and grasped by the mind.

A WORLD PANORAMA OF HEALTH EDUCATION. New York: American Child Health Association, 1930. 256 pages. This volume presents the discussions of the health section of the World Federation of Education Associations which took place in Geneva, Switzerland, in 1929. Among the resolutions relative to school health procedures, the following, which is number three, is of special interest to sight conservation workers: "That the Health Section recommends that publishers be encouraged, where this is not done, to bring out text books for children in large types in the interest of the eyesight of the pupils and that the size of the type be considered by educational authorities in accepting or rejecting the books."

PIONEERS OF PUBLIC HEALTH. M. E. M. Walker. New York: Macmillan Company, 1930. 270 pages. Popular presentation of the lives of twenty-one important contributors to the health and welfare of society, attractively printed and illustrated. One regrets that the series did not continue at least to the inclusion of Hideyo Noguchi, born 1876, whose work not only in yellow fever but in trachoma has started a new path in the solution of disease which has not only national but international significance.

# The Eyes in Childhood\*

J. Milton Griscom, M.D.

**J**UST as certain diseases are common to childhood, there are special hazards to sight from eyestrain and accidents which occur in the playing of games, in school work, and in other activities of boys and girls.

**I**T IS not the purpose of this paper to present anything essentially new concerning the conservation of vision in children, but rather to recall some of the more important ophthalmic questions on which those in general practice are frequently consulted. The greatest emphasis naturally should be placed on prevention, since eyes damaged by injury or disease often regain only a fraction of their normal visual acuity; and even though this may affect one eye only, the resulting interference with binocular vision is a serious matter and a real handicap in any phase of modern life.

In the industrial field much has been accomplished through education and regulation to prevent injuries, but with children the problem is not so easy. The legal restrictions placed on the sale of fireworks and other explosives have greatly reduced the incidence of eye injuries during the Fourth of July period, but we must depend on further education among parents if we are to lessen the loss of vision from accidents which are generally beyond control by law and which are usually called household accidents. It would seem that ordinary precaution and common sense would lead mothers and fathers to keep from babies and children such articles as knives, forks and scissors; to warn the boys of the family of the danger of cutting toward the face when using a pen-knife; to instruct those possessing air-rifles or any other form of weapon as to its proper use and its possible dangers; to discourage such

\* Read before the Philadelphia County Medical Society, Philadelphia, Pa., November 12, 1930, under the Dr. Mary Fisher Foundation Annual Ophthalmological Lectures.

games as "peggy," where the peg of wood, after being hit, flies directly toward the face; and to see that children who wear glasses take them off before playing games wherein they may be broken. Such accidents are to be prevented only by parental education, which really should begin as pre-parental education during high school days. If during this impressionable age a few direct and clear instructions were given regarding ocular hygiene, there would eventually be fewer children with partially or totally blind eyes.

Children with myopia of such a high degree that they cannot participate in any form of sport without glasses should be protected by wearing non-shatterable lenses when exposed to possible breakage. The ophthalmologist is primarily responsible for such instruction and advice, but an additional check by the family medical adviser may prevent trouble.

In line with this subject is the question of damage to the eyes from broken automobile windshields. Injuries from flying pieces of glass increase each year as the number of automobile accidents increase, and children suffer their share. The time has arrived when the medical profession should agitate for the general use of non-shatterable windshield glass by automobile manufacturers. Such uniform equipment would undoubtedly save the personal and economic loss which each year occurs from damaged or lost eyes following automobile crashes.

Finally, under the consideration of eye injuries, it must be remembered that in any wound involving the ciliary region, which is the zone from six to eight millimeters behind the margin of the cornea, there is always the possibility of sympathetic inflammation of the fellow eye. In this, disease prevention is of utmost importance, since, once it becomes affected, almost certain impairment and often loss of sight follow in the uninjured eye. Beware of the child's eye with a penetrating wound of the ciliary region, even though healing has taken place.

Ocular inflammations which may result in partial or total blindness are preventable. Perhaps the most striking example of this is the Credé treatment for preventing babies' sore eyes, with which everyone in general practice is familiar. The number of infants who acquire ophthalmia neonatorum has been reduced from over ten per cent to less than one-half per cent through the

use of a one per cent solution of nitrate of silver dropped in the conjunctival sac immediately after birth. This should be a routine procedure in every delivery, regardless of whether there is or is not any evidence of active infection in the mother, since latent infections may give rise to ophthalmia. Despite the great reduction in the number of victims of this disease, there are still too many eyes lost each year. The remedy lies in the use of the Cr  d   treatment at every birth.

A common disease in childhood which should command the attention of physicians and parents is phlyctenular keratitis. The underlying condition is the so-called strumous diathesis dependent on bone or glandular tuberculosis, or secondary to prolonged errors of diet. The corneal ulcers which form frequently leave dense scars, or, if they perforate, cause serious impairment to the deeper structures of the eye. In either case vision may be permanently affected. The education of parents concerning general hygiene and diet in children would greatly reduce the incidence of this disease.

There are certain eye affections which are not preventable and which are comparatively innocent unless they are converted into something more serious because of improper treatment. Foreign bodies on the conjunctiva or cornea, if removed promptly under proper precautions, seldom do any damage, but if the corner druggist or a neighbor is consulted who operates with a toothpick or a saliva moistened handkerchief, or inserts a flaxseed in the conjunctival sac, a purulent conjunctivitis or a cornea damaged through ulceration, may result.

When styes form they should be permitted to follow the course of any localized pyogenic infection. If they are prematurely opened with a pin or needle, or if a poultice is applied, a serious infection may result. Children suffering from styes are frequently treated with argyrol. This remedy has its place in ocular therapeutics, but it is a distinctly secondary one, and even in this r  le is more irritating than useful unless the solution is freshly prepared. It should never have a place on the family medicine shelf, not only for the reason just stated, but also because it is very easy to confuse argyrol with tincture of iodine. This confusion is by no means theoretical and its practical importance could be proved by numer-

ous instances where the substitution of one for the other has led to disastrous results.

The prevention of partial or complete blindness due to inflammatory diseases of the eye is therefore dependent on parental education, concerning what not to do as well as what should be done, in addition to preventive measures and early treatment by the physician in charge.

The question of the need of and the use of glasses is receiving increased attention from those interested in the maintenance of both comfortable and good vision in children. A notable example of this work is seen in the medical supervision of the Philadelphia public schools, where the early recognition and correction of errors of refraction have been a routine procedure for many years. The sight-saving classes are of particular benefit to those who suffer from progressive myopia. This care should be extended to the examination of preschool children, particularly those who have a family history of myopia. Each child with a myopic inheritance should be treated as a potential myope, and it should have frequent and careful examinations as well as the regulation of the amount of and the conditions surrounding near work. In all children the use of a cycloplegic is essential for an accurate estimation of the kind and extent of refractive error present. Especially in myopia is this method indicated, since an examination while accommodation is active practically always leads to an over-correction, and glasses which are too strong in nearsightedness tend to cause strain instead of relieving it.

The ophthalmologist has only a limited clinical opportunity to take a part in the program for the prevention of blindness. His active professional work concerns itself largely with the repair or correction of damage already done. Only indirectly, through close co-operation with the family physician, or through social agencies working along the line of pre-parental and parental education, can we be of constructive service in the reduction of blindness.

# Eye Protection in Industry

Louis Resnick

**T**O reduce the eye hazards of industrial occupations, the author suggests: (1) providing goggles and machine guards; (2) revision of machinery and the process of work; (3) training workmen and foremen in safe practices.

**T**HE eye hazards of industrial occupations have come to be among the most serious of all causes of blindness. While no extensive authentic statistics are available, it has been conservatively estimated that at least 15 per cent of the blind of America lost their sight because of occupational hazards.

Considerable progress has been made in the development of mechanical safeguards for the eyes of factory workers. Some large industrial organizations have brought about marked reductions in the number and severity of eye accidents among their workers. Considering industry as a whole, however, the problem of protecting the eyes of employees is still largely unsolved.

In terms of workmen's compensation, the eye hazards of industry are more serious than any other group of accident hazards, with the single exception of those resulting in death. More money is paid by employers each year as compensation for eye injuries than is paid for injuries to any other part of the body. In the principal industrial states, a total of more than \$10,000,000 a year is paid to workmen who have lost all or part of their sight. This, the direct cost, presents only part of the picture.

Analysis of some 75,000 accidents by the Travelers Insurance Company\* shows that the indirect loss to industry of accidents generally is four times as great as the direct loss, namely, compensation payments. When a factory worker—man or woman—suffers a serious eye injury, a long chain of costly interruption of

\* Heinrich, H. W., *Industrial Accident Prevention*, New York: McGraw-Hill Book Co., 1931.

work ensues; the injured employee's fellow workers lose time in rendering first aid and getting him to a doctor; other workmen lose time watching the proceedings; the foremen and still other men spend time investigating the circumstances of the accident; the general morale of the department, and sometimes of the entire plant, is impaired; often valuable material is destroyed; follow-up investigations consume time. These are only a few of the indirect costs of eye injuries.

It is estimated that these indirect costs—on the basis of actual experiences in the 75,000 instances studied—amount to at least four times the primary cost, namely, the compensation award to the injured person. It appears then that the actual cost of eye injuries in industry is in the neighborhood of \$50,000,000 a year.

That the eye hazards of industry are of the utmost concern to employers, employees and the community as a whole becomes immediately apparent, from an entirely different point of view, when one considers this simple fact: when an arm or a leg is lost as the result of an accident, it can nearly always be replaced by an artificial limb which can do almost anything the human member could do; but when the sight of an eye is destroyed by accident, the loss is irreplaceable—you cannot see a thing through an artificial eye.

What are the eye hazards of industry? Briefly they are the accident hazards, the disease hazards and the hazards of excessive eye fatigue. The accident hazards are produced chiefly by flying chips of metal, wood, rock or other hard substances; by falling or thrown tools, raw materials and other large objects; by the splashing of molten metal or injurious chemicals. Disease hazards affecting the eyes with which industry is or should be concerned are the venereal diseases, trachoma, cataract, nystagmus and the general toxic effects of those poisonous chemicals commonly used in many industries which may affect the eyes as well as other organs. The hazards of excessive eye fatigue are those due to insufficient light, too much light (glare), flickering light, or too long neglect of eye conditions requiring refraction or other corrective measures.

The accident hazards are, of course, the most serious of all these. How can these hazards be eliminated or their effects

counteracted? Briefly, they can be prevented in three ways: (1) by the provision of protective equipment, such as goggles and headmasks for individual workmen, screens of metal, wood or canvass between workmen, glass shields protecting the point of operation of emery wheels and other machines; (2) by revision of the process of work, by redesign of tools and machines, by rearrangement of machines and other plant equipment; and (3) by rules of work, by supervision, training and education in safe practices of workmen and foremen.

In the last connection, too much emphasis cannot be placed on two facts: (1) that mandatory rules concerning the use of goggles and other protective devices in particular operations and the strict enforcement of these rules are proving the most effective means of reducing eye injuries in the plants of such important companies as the United States Steel Corporation, the Pullman Company and the Union Pacific System; and (2) that it is worse than futile to establish mandatory or other stringent rules in plants where they cannot be enforced or where they are not supplemented by year-round educational activities and supervision that is not only sympathetic to organized accident prevention, but sincerely enthusiastic about it.

The National Society for the Prevention of Blindness has recently undertaken the formulation of a self-appraisal for safety engineers and other executives concerned with the conservation of vision in industry. This appraisal form, when completed, should incidentally constitute a program for 100 per cent eye protection in industry.

There are already included in the preliminary draft of the self-appraisal 59 questions. Only the plant which can answer each of these questions in the affirmative can truly be said to be doing a thoroughgoing job of safeguarding the sight of its employees. Even these 59 items, however, do not completely cover all that it is possible for an industry to do for the protection of the eyes of its workers.

Too often it is assumed in particular plants that if goggles have been provided, signs and bulletins posted, books of safety rules distributed and orders issued to foremen concerning their responsibility for accident prevention, the whole job of eye protection has

been done. If the self-appraisal form does nothing more, it will at least show how far wrong this notion is.

This appraisal—especially when it incorporates the many constructive suggestions that are being made for its improvement—should enable the individual safety engineer or plant manager to find out exactly where his property stands in comparison with the ideal in the matter of protecting the eyes of the company's employees. It should enable those responsible for accident prevention to formulate immediately a program for thoroughgoing eye protection.

The appraisal which is presented here is still in process of development. The National Society for the Prevention of Blindness welcomes the suggestions of all those directly concerned with eye protection in industry for the improvement of the form and for its ultimate utilization.

## A Self-Appraisal for Safety Engineers and Other Executives Concerned with Conservation of Vision in Industry

### I. THE PLANT

#### PROTECTION AGAINST ACCIDENT HAZARDS

Points  
Scored

1. Are goggles and head masks available for each employee exposed to the danger of:
  - (a) splashing of molten metal or injurious chemicals? . . . . . \_\_\_\_\_
  - (b) flying dust or particles of emery, metal, rock, wood or other hard substances? . . . . . \_\_\_\_\_
  - (c) falling or thrown tools or other large objects? . . . . . \_\_\_\_\_
2. Do the goggles meet the required strength specified by the National Head and Eye Code? . . . . . \_\_\_\_\_
3. Are the goggles or other protective devices the most comfortable that may be secured? . . . . . \_\_\_\_\_
4. Are goggles fitted to the individual workman? . . . . . \_\_\_\_\_
5. Are emery wheels equipped with glass shields? . . . . . \_\_\_\_\_
6. Is some one person charged with responsibility for cleaning and replacing pitted or broken emery wheel shields? . . . . . \_\_\_\_\_

	Points Scored
7. Are emery wheels and other sources of dust or flying particles equipped with exhausts to draw off such particles? . . .	_____
8. Is there adequate provision for keeping tools in good condition?—	
(a) by periodic inspection of tools for mushroomed or burred heads, for cracks or other defects? . . . . .	_____
(b) through definite responsibility for dressing tools? . . . .	_____
9. Are the points of operation of lathes, drills, punch presses and other high speed machine tools protected by glass or wire mesh guards? . . . . .	_____
10. Is the general housekeeping of the plant such as to reduce to a minimum the possibility of—	
(a) workmen falling or stumbling? . . . . .	_____
(b) tools or other objects falling from high places? . . . . .	_____
11. Is there a properly equipped and staffed first-aid room? . . .	_____

#### PROTECTION AGAINST HEALTH HAZARDS

1. Are there adequate facilities for washing—including hot water and soap—conveniently located and available to all workers without long waiting? . . . . .	_____
2. Are individual towels available? (Use of roller towels in public places is forbidden in most states as a precaution against the spread of communicable disease). . . . .	_____
3. (a) Is each worker needing a head mask or goggles provided with a pair for his exclusive use? (The use of the same goggles by more than one person involves the danger of communication of disease). . . . .	_____
(b) Is there provision for sterilizing goggles turned in by one employee before they are issued to another? . . . . .	_____
4. Is adequate exhaust equipment provided to draw off poisonous fumes and gases? . . . . .	_____
5. Are respirators provided for all workers exposed to the dust or fumes of injurious chemicals? (Such exposure often leads to impairment of vision as well as other bodily injuries) . . . . .	_____

	Points Scored
Where respirators are necessary, is there provision—	
(a) for an individual pair for each worker? . . . . .	_____
(b) for sterilization of respirators turned in by one work- man and handed to another? . . . . .	_____
6. Are plant layout and machinery arrangement such as to make it unnecessary for any employee to work in a strained position for long periods? (Subjection of the eyes to abnormal and unaccustomed motions may lead to serious eye disorders) . . . . .	_____
7. Is there adequate provision of proper goggles and head masks to protect workers from injurious heat and light rays? . . . . .	_____

#### PROTECTION AGAINST THE HAZARDS OF UNDUE EYE FATIGUE

1. Are prescription lenses provided for all employees with defective vision—	
(a) without charge to the employee? . . . . .	_____
(b) employee pays half? . . . . .	_____
(c) employee pays whole cost? . . . . .	_____
2. Does a foot-candle meter check of illumination in the plant show conformance with the minimum intensities of light recommended by the American Standard Code of Lighting Factories, Mills and Other Work Places? . . . . .	_____
3. Is illumination in the plant devoid of—	
(a) flickering lights? . . . . .	_____
(b) sharply contrasted lights and shadows? . . . . .	_____
(c) permanent or intermittent glare? . . . . .	_____
4. Is the plant arrangement such as to make unnecessary exposure of employees' eyes to—	
(a) glare of the sun? . . . . .	_____
(b) unshaded filaments of electric light? . . . . .	_____
(c) intense open fires or carbon lights? . . . . .	_____
(d) reflection from polished surfaces? . . . . .	_____

Points  
Scored

## II. THE WORKER

1. Is good vision a prerequisite to employment in your plant?.....
2. Are the eyes of all workers examined at the time of employment?.....
3. Are the eyes of only skilled employees examined?.....
4. Is a report of the findings in such examination given to the employee or applicant for work?.....
5. Are employees' eyes re-examined—
  - (a) at stated periods—biannually? annually? or semi-annually? (state how often).....
  - (b) only when symptoms of possible eye disorders appear?.....
6. Is there provision for general physical examination of employee—
  - (a) at the time of employment?.....
  - (b) at regular recurring intervals?.....
  - (c) when symptoms of disorders appear?.....
7. Are workmen with seriously defective vision or with disease involving the eyes referred to—
  - (a) an oculist?.....
  - (b) a general medical practitioner or family doctor?.....

## III. THE JOB

## ASSIGNMENT OF WORK

1. Is the visual acuity of each employee taken into account in assignment of work?.....
  - (a) Is it done through job analysis and test of vision with Snellen Letter Chart?.....  
or
  - (b) Is it left to the judgment of personnel manager, foreman or other supervisors?.....
2. Is there a periodic check of the relation of worker's vision to the character and quality of his job? (If so, state how often).....

	Points Scored
SAFETY RULES	
1. Is there a mandatory rule concerning the wearing of goggles or masks in prescribed occupations and is this rule conscientiously enforced? . . . . .	_____
2. Does such a mandatory rule apply to foremen, other supervisors and plant visitors as well as to workmen? . . . . .	_____
EDUCATIONAL ACTIVITIES	
1. Are accurate records kept of— (a) number, nature and cause of eye injuries; (b) frequency and severity rate of such injuries; (c) compensation and other costs due to such injuries. . . . .	_____
2. Is there a definite and permanent program of safety education, including instruction in protection of eyes? . . . . .	_____
Total Credit . . . . .	1000 points

# Experiences of an Exchange Teacher in the Myope Classes in Glasgow, Scotland\*

Louise Rush

THE "myope classes" of England and Scotland correspond to the "sight-saving classes" in the United States and Canada for children with defective vision. A demonstration sight-saving class will be started soon in Paris. In many other countries, too, educators are now giving serious attention to the special requirements for teaching visually handicapped children.

FIRST of all, it may interest you to know something about that organization, the League of the Empire, under which we teachers may go on exchange. It is founded, broadly speaking, for the promotion of better understanding between the different parts of the Empire. One way of doing this is by the exchange of letters between the school children of all parts of the Empire. Another way is by the interchange of teachers. All business is managed by a central office in London; in each of the dominions is a branch office; in fact, in Canada there is one in each province. Generally speaking, the teachers take each other's work but are paid by their home board at the same rate as if they were still at home. This opportunity for exchange is deemed a great privilege, and in our city far more teachers apply than the twelve who are allowed to go.

What may be done in the leisure time makes an appeal to the average teacher, and most teachers prefer to go to London because of its history, its literary shrines, its beauty, its being the general center of all things and the very embodiment of our Empire. But no matter where they are sent, all agree that it is worth the experience a hundred times over.

\* Presented at the Annual Conference of the National Society for the Prevention of Blindness, November 17, 1930.

But the work in school is hard—one series of adjustments. One is not familiar with the curriculum, the organization of the schools is very different, methods are new to us, equipment and supplies have to be learned, the very vocabulary of school life has to be mastered. My pupils did not understand my requests or commands. When I said, "Come to me," no one moved; but when I learned to say, "Come away oot," all was well. Besides, no matter what responsibility one has had at home, one is a subordinate there. I was surrounded with kindness and sympathy and helpfulness in my work in Glasgow from first to last; but the experience is not always that. One meets a mighty conservatism, and sometimes there is an ill-concealed condescension toward colonials.

I was not anxious to go on exchange, knowing the disadvantages as well as the advantages. But when word came to Toronto that there was a myope teacher in Glasgow who wished to come on exchange, it was conceded generally a coincidence that within such a limited sphere such could be arranged. The powers-that-be thought it a fine opportunity for me to go and work side by side with teachers in my line there. I accepted on condition that I would be placed so as to be working actually in the same building with other teachers of myopic classes. So August, 1929, found me in Centre Street School in Glasgow, a literal exchange, the Authority having stipulated that only a teacher of training and experience in this work would be accepted.

I knew before I went that my school would be in the slums. In the discussion in the Imperial House of Commons last winter on the Slum Clearance Bill it was brought out that Glasgow had worse slums even than London.

An aerial panorama of the school and surroundings would reveal a paved playground extending from one street to another, screened from public view by a high iron fence painted a bright green and hedged about by huge, ugly, grim tenements, enlivened by the railroad and its "goods" (freight) station. In this enclosure are two gray stone buildings, rather small; the janitor's house, the sheds for shelter on rainy days (in much demand), and the lavatories. At the "interval," about 10:30, many mothers all be-shawled, with a baby tucked in dexterously and other small people in tow,

came with a "play-piece" or some milk or tea for their bairnies. I thought, as I saw them in all their hopeless poverty, "How lovely to see such solicitude in such surroundings!" But when I voiced my sentiments in the staff room when we took our morning tea, at eleven, I was told that these ideal mothers before whose shrine I had been bowing had been too lazy to get up and give their offspring a right and proper breakfast before they ran to school.

Though the school was old, it was in fine repair and had recently been painted a bright green about the windows, with doors painted red. Strange colors, thought I at first, but I soon recognized the wisdom of it—it made a bright spot, literally, for the neighborhood.

The arrangement of classrooms would, no doubt, strike you as it did me. The school buildings are not huge structures, as with us, so that usually on one side of the "passage" would be just room for three classrooms arranged with what struck me as almost temporary walls. I am sure they could be shoved aside, the upper half was glass, the lower part opaque and the upper glass clear. Why? To let in all the precious light there is! And in order to get to two of these three rooms all pupils and teachers must pass through the first or outer room. At first I found this disconcerting—I was in the middle—since there was little privacy and all extra commotion made itself felt beyond one's own room.

My room was about one-third the size of my room at home and only by going sideways could I manage the aisles. But it was as bright a room as I saw anywhere; the aspect was southern, with no building very close to my windows. When the sun did shine we got it and one is so grateful for it! The sky is so beautiful in Scotland, so blue, with the fleeciest, puffiest clouds.

When I looked out I saw before me the court of an ugly, dingy tenement, built like a U, and I looked into the opening of the U. It was four or five stories high, built of stone, blackened with age, plain, of course, rows and rows of windows, some of them with bedraggled sash curtains, a rare few tidy, and many guiltless of any—ugly, deadening, pathetic. One or two had a window box in which were bravely blooming a few of the unhealthiest, most anemic looking marigolds it has ever been my luck to meet. Attached to each window and extending from it was a rope or a rod, and on these there always dangled a bit of washing, a pullover,

a man's shirt, a child's faded pinnie. I had never thought before of the difficulty of getting the clothes dry! But when the sun shone unexpectedly the court blossomed out at once into long lines of bedding and underwear criss-crossed—always a puzzle to me. How did they have them ready for the sun, and what would they have done had it not shone? I never knew. In all that district there was not a green tree, a bit of grass, any blooming, living thing! After our beautiful tree-shaded streets in Toronto, I stood aghast!

There were two features about that classroom that struck me. Each child sat in a little chair before an individual blackboard about a yard square. This board was adjusted to the eye level of the child by a rod which fitted into corresponding notches. The child was taught to sit upright and with quite a straight arm write with chalk upon his board. Thus, perforce, he wrote largely, and at his eye level. The other feature was the wall blackboard, a sort of double affair like the sashes of a window, adjusted by pulleys, ropes, and balance weights. Thus, again, the work could be fitted to the eye level of the pupils; in a room with little wall space it had the extra advantage of providing a double amount of blackboard surface, since it was as high as a window and either half could be pulled down when desired. Besides this, there was an easel blackboard about which I brought my class for much teaching.

And what shall I say of my pupils? I hope they have as kindly a memory of me as I have of them. We were strangers and we spoke a different language; it was a month at least before we caught on to each other's vocabulary. These were children and consequently loving and lovable. They attracted me to an amazing degree and I simply slipped away from them at the end, dreading a final goodbye. There were twenty-one of them, the average age about nine. Some were undersized because undernourished; some were surprisingly normal, with the bluest of eyes and rosiest of cheeks. How it was achieved was beyond me! They were seldom ragged or so poorly clad as to command commiseration, or hungry, for the Authority and the much maligned "dole" see to it that no one starves or is cold in the old land. Remember that in this time of depression! I would find a small person below my tall desk some morning, "Please, miss, my mother says my boots should be

sorted," and so a form would be filled and the boots sent up to the central office. Or, "Please, miss, I am in need of a pair of troosers." The Authority suits and dresses were pretty much of one pattern and material, so it was easy to spot the indigent at play time.

But, with rare exceptions, they were not clean, but dreadfully unclean. And running noses with no hankies! But there is always a way out; packets of paper serviettes from "Woolworth's," a pan of water, a cake of soap, an unfriendly brush worked wonders with the line-up every morning. But, of course, I could reach only hands and faces. One gets very dirty quickly in the murky atmosphere of industrial Glasgow. But for a very small sum a mother can take her family to the baths, so that there is not a very good reason for this condition unless we remember that living under such conditions as they do is not conducive to clean thinking.

In each myopic department there is a head mistress, who is paid a considerable sum extra for each teacher under her, though the teachers draw the salary of the teachers of the ordinary scale. This head gives real direction to the program and routine of her department and accepts all responsibility therefor. She decides the course of study; makes the time tables; handles the discipline, and compiles a summary of all reports. The head master of the school does not dictate to her in any way, except in matters pertaining to the school as a whole, such as heating, ventilation, fire drills. There is not, as far as I could judge, any effort to follow the scheme of work set down by the authority for the elementary schools of the city. The head mistress of the myope classes has great freedom of choice as to program. There is an elusiveness to the view in the old country in respect to the attitude toward the education of the lower classes. It seems to me that there is a certain mental attainment for each class of society; beyond it they cannot, nay, must not, pass. A child is to be educated for the niche he is to fill and it is likely to be the same niche as his forebears; there is little thought (I may be wrong) to prepare him for any other class than that into which he was born. With these handicapped children even less is expected, so less education for their niche would be even below the average.

There are outstanding features of the regular program and these

are incorporated into that of the myopic classes. There are some especially fine things in the old country schools indicative of the older culture of the people. Thus in Glasgow, three or four times a week is a period just for poetry, apart from the regular reading lesson—just for cultivation of and delight in poetry with an interest toward proper voice training and modulation. These pupils can repeat (and do so beautifully) a great many poems—Shakespeare's as well as the modern poems of Rose Fyleman, A. A. Milne, and Walter de la Mare. They sing beautifully, too, and their choice of songs is good. In Glasgow it was a treat to hear them singing the old Scotch songs. What an instilling and deepening of the love of the country they gave!

Have you ever stopped to think of the molding influence on the individual of a half-hour's Bible study every school day, even up through the secondary school? Almost half of my children were Roman Catholics who obtained this work at some adjoining Roman Catholic school before coming to me. But we learned standard hymns, many beautiful Bible selections and stories suited to their age. Of course their conception of the circumstances was often new to me. Shall I tell you Edward's rendering of the story of Christ in the Temple which I had taught them but which he had heard before at Sunday school? Edward is "aboot" eight, dirty, his "jersey" covered with the remains of many meals all taken at the expense of the Authority, but sturdy and confident that the teacher esteems him highly! (He isn't, out there.) He is an albino; his mother is ashamed that she has so many children who are albinos, so she hennas his hair and makes an atrocious job of it, thus making a sorry spectacle, albeit somewhat overcome by his keen blue eyes, his fair skin and rosy cheeks. But to get on with the story. After recounting the first fact of the family going up to the feast and their return journey, he went on something like this: "His Mother Mary thought her wee boy was playin' aboot with the other wee boys but she cudna find hem (that's not an error, they always make their short i's into e's). She looked into the wee corners and lobbies an' every place and afters while she heard a lot of men speakin' and listened and looked in and saw Jesus among the wise men and the meenesters. She waited quiet like for awa, then shouted 'Jesus' quiet like but he paid not

attention and so she shouted louder and he came oot. 'What were ye talkin' to them meenesters for, Jesus?' 'I was learnin' about my Father God.' " And then, "She tried to forget about a' that." And in conclusion: "His daddy was a joiner makin' cupboards and presses and could fix yer windy if it needed it. Jesus used to bring in big planks for his daddy to cut up while his mother set oot knittin'."

Physical drill is given much attention. The courage and virility of the old country are amazing and stimulating in their attack on her problems. In that city they recognize the danger of slum life on the young child and strive to meet it while the housing schemes are developing by giving a tremendous place on their school program to physical training and organized play. There is a drill hall in every school, and in favorable weather there is a class, even more than one at a time, in the playground under the direction of a teacher.

There is an individualism about methods everywhere, but on the whole I found that script was used in the myopic classes in Glasgow though printing is the method used in the ordinary class. No books are used for any purpose—no readers as you have. In the Centre Street school the teachers print on one of the blackboards an extract for oral and written reading used also for spelling. There is much repetition used in old country teaching and the children read very well although they have such little practice. The larger boys go to "manual" and the girls to cooking. The latter are also taught knitting, plain. Over there it takes much practice and patience to cope with pounds, shillings and pence. I used to marvel how quickly, for instance, the salesman reckoned  $\frac{3}{4}$  yd. silk at 6s., 11 $\frac{1}{4}$ d. a yard.

I think the eyes of the children are watched carefully. The pupils are taken by guides to the clinic near by in a car sent by Authority when they need to go. The head receives all such instructions. Some go regularly once a week, some once a fortnight, others monthly. As a general rule, the doctor does not visit the class.

I asked and obtained permission to visit myopic schools in London the first week in January. Three schools were suggested to me. I was expected and everything was arranged for the least

waste of time, except the long distances I travelled. Mr. Shaw, the Special Schools Inspector, kindly met me at one of these centers and gave me a whole afternoon of his time. I shall rapidly mention the points peculiar to London. There, myopia is the standard of admission—"No fundamental eye defect except myopia," said Mr. Shaw. If a child cannot see a square E of the size of  $\frac{2}{5}$  inch at a distance of five metres, he is excluded. No child is admitted for nystagmus, keratitis, opacities, cataracts, etc., alone, but is admitted if these difficulties are associated with myopia.

The lighting is indifferent, so on dark days only oral teaching is permitted. In London is seen a blackboard that works like a huge roller towel; and here printing, not script, is in use. No individual blackboards are used in London, but a desk of simple character made in the London County Council workshops. The desk itself is at right angles to its upright support and turns up smartly, presenting a surface which, when up, is almost but not quite parallel with the child. This under portion is painted black and on it the pupils write with chalk at arm's length. The teachers are put to it for enough space in senior classes, so have extra boards which lean against the desk. No pencil or pen is used. The older pupils use large sheets of white paper, 54 by 20 inches, folded once and attached to the tops of their boards in various ways. There is no way, you see, of adjusting work to eye level, but Mr. Shaw is at work on a new desk to which paper can be attached like a roller towel. No printed texts of any kind are used—extracts are printed with a printing press of large type done by a senior pupil. The sheets are bound as in a book and in this way the older centers have accumulated a good bit of material.

There is an effort to correlate the work with the general course of study, but the pupils do not go into the regular class for any work. The brighter children sit for the scholarship examinations and some senior work is being carried on in the secondary and senior schools. Mr. Shaw is considering the question of teaching Braille to those pupils in myopic classes who will never be able to read ordinary books. They also use a remarkable machine which they think highly of, an Epidiascope, by means of which a page from a book, a

map, a nature study specimen may be thrown upon a sheet, thus enlarged so that the pupils may read the text.

I was also privileged to see schools in Sheffield, Paisley and in Drumpark, nearby.

This has been lengthy, but still only a hurried survey of what I experienced. There has been no time to put in incidents, stories, illustrations to brighten the bare account; it is rather dull, drab, choppy. But if you have preserved your old Sight-Saving Exchanges\* you will find in them a very adequate account of Mrs. Hathaway's and Miss Peck's visits to these schools, told in a much better way than I have. But—it was the most wonderful year of my life. For the most, I took the part of spectator, watching, as it were, a show. At times I, too, took a part, broadening my outlook and deepening my sympathy. I came home with a better understanding of the problems of others and a greater love than ever for the land of my forebears.

\* "A Brief Survey of Myope Classes in England and Scotland, September–October, 1926," *The Sight-Saving Class Exchange*, April, 1927.

## Prevention of Blindness in India

C. G. Henderson, I.C.S.

**M**OST of the world's blind are found in Asia, where economic and social conditions are serious obstacles in the path of preventive work. This article about the 1,750,000 blind in India is the first of a series on conservation of vision in different countries to be published in this REVIEW from time to time.

**A**LL over the East, and in fact in most tropical and sub-tropical countries, blindness is very prevalent, and only of recent years have people begun to realize that much of this blindness can be relieved, and still more of it, if not most of it, could, with proper measures taken, be prevented. In Egypt, renowned for its sufferings from blindness, it was a gift of 43,000 pounds sterling made by Sir Ernest Cassel at the beginning of this century, that was the initiation of that fine ophthalmic service which, begun under the guidance of Mr. MacCallan, has now spread all over the country, and gives medical treatment to three or four hundred thousand patients a year. Turkey, Arabia, Africa, Persia, India and China are all countries where there is a very high incidence of blindness and suffering from eye disease, and where western medicine has not yet penetrated sufficiently deeply to make much impression on the vast masses of the mainly rural and illiterate populations. There is a great "trachoma belt" extending from China into Eastern Europe, stopped from spreading all over the West probably only by the higher standard of sanitation and cleanliness which the advanced European nations have attained. The late Dr. Ernst Fuchs of Vienna, after describing a visit paid by him to Abyssinia, where he found the eye conditions appalling and facilities for medical relief entirely absent, said in 1929 in his address to the American National Society for the Prevention of Blindness: "I think there is a very wide field for a Society which

extends its work beyond the frontiers of America, and more or less throughout the whole world. I think if something could be done in the South countries (and Abyssinia is only one instance), such as Turkestan, Afghanistan and others, along the line of work done in Egypt, establishing traveling hospitals, hospitals in tents which would treat the people of neighboring cities and stay there may be for eight or ten months, it would be of great benefit to these countries." "In Turkey," said Dr. Alden Hoover many years ago, "trachoma is so prevalent that there should be a clinic in every city of the country. The amount of defective vision and consequent inefficiency is incalculable. The prevention of blindness, by the control of trachoma, gonorrheal ophthalmia and smallpox, would be one of the greatest blessings America could give to Turkey." The field for the eye specialist, he says, is unlimited. So it is in India.

The extent to which blindness prevails in India is perhaps generally too little realized. The census figures which give us the number of the totally blind present a picture which is deplorable enough, but there is reason to fear that they fall very far short of the truth. For the whole of India the figure for totally blind persons shown in the census returns of 1921 is half a million, giving an incidence of about one and a half per thousand of the population. To anyone at all acquainted with the extent of blindness and eye disease everywhere prevailing, these figures must appear surprisingly low, and, in fact, the compilers of the reports themselves suspect that they are very unreliable. In the Nasik district, for which the census figures showed an incidence of 1.74 persons totally blind in both eyes per thousand of the population, an actual count was made by the writer in 1918-19 in four talukas in villages with a population of 212,000. Lists of blind and partly blind people having been prepared by the headman in every village, all these persons were actually inspected and an incidence of at least 4.38 totally blind per thousand was found. A good number of blind persons were no doubt missed in the preparation of the lists, so that the figure given is probably well below the facts. Similar counts were made in other areas. In the Ratnagiri district, which according to census figures showed an incidence of only 0.7 per thousand, there was found in three talukas, which are

probably among those least affected with eye disease, an actual incidence of at least 1.5. In the Bijapur district, for which the census incidence was given as a little less than 0.7, the real incidence found by this actual count made in 1920 varied from at least 3.5 per thousand in the worst talukas to 2.2 in the best, with an average incidence of at least 2.6. A few years ago a Deputy Commissioner in the United Provinces had a similar count made and discovered an incidence of no less than 9 per thousand. In the Palanpur Agency 7 per thousand has been found. If, as is not unlikely, this sort of error of underestimation in the census reports is general, then it is not unreasonable to suppose that the real incidence for India is more like 4.5 per thousand than the 1.5 per thousand indicated by the official census. India, according to the 1931 census, has now a population of 350,000,000, so that the number of totally blind persons may be estimated at 1,750,000.

These figures for total blindness by no means give the full picture, for they include only people totally blind in both eyes, and say nothing of the much greater number who, from neglected eye diseases, are partially or even nearly blind and whose happiness and efficiency are thus greatly impaired. In Egypt, the Department of Public Health accounts as totally blind any person who cannot count fingers at a distance of one meter. If such persons were counted in our statistics of total blindness in India, there is little doubt that the figures would be very much larger even than those indicated above. It has been stated that blindness is worse in Egypt than in India, but this statement is open to very serious doubt. Recently an analysis has been made of a very large number of eye patients attending the "camps" and dispensaries of the Blind Relief Associations in Western India, and it has been found that for every totally blind person there were nearly three persons with more or less damaged vision—the result of eye disease. Thus, in Sind, out of 11,947 patients, 1,967 were totally blind, and 5,284 persons had more or less seriously damaged eyes. A fair number of these were persons with immature cataracts or, in other words, people for whom total blindness was impending. The ratio of about three partially blind persons to every one totally blind has been found fairly constant wherever this analysis of patients has been made. It appears not unlikely that the true

ophthalmic condition of India would be represented by figures showing 1,500,000 to 2,000,000 totally blind persons, and in addition to these from 4,000,000 to 6,000,000 with more or less impaired eyesight.

The points with which practically we are most concerned is that much of the blindness that prevails is preventable blindness but unfortunately is not prevented; and secondly, that a great deal of the existing blindness is actually remediable but is not remedied. "No one," says Lt. Col. R. H. Elliot, writing in the *British Journal of Ophthalmology*, of May, 1919, "who has not worked in India can form a conception of the enormous amount of preventable and curable blindness which is laying its shadow over the health, happiness and usefulness of this great portion of our Empire." And the same writer, in another place, has said: "It is difficult for anyone who has not had first-hand experience of medical practice in the East to realize the state of things out there. Granular ophthalmia claims its victims by the ten thousands, whereas it is really a disease which, when properly treated at an early stage, should not cause the loss of a single eye. The neglect of the eyes of patients suffering from smallpox and other febrile conditions leads to a vast amount of blindness, while the treatment of mild ocular affections by irritant drugs is probably one of the most powerful of the evil factors that spread blindness broadcast throughout the land. Large numbers of men and women suffering from glaucoma, from cataract and from other curable diseases are allowed to hide in their villages like wounded animals, waiting only for their release by death. This is not an overdrawn picture. It is a statement of cold, hard, cruel facts well known to everyone who has practised or is practising medicine in the East."

The number of oculists in India is notoriously small. There are four major ophthalmic hospitals in the country; some few other hospitals have ophthalmic branches, and there are a certain number of dispensaries at which eye work is done; and some of the medical missionaries are oculists. There are also private practitioners who, however, are mostly congregated in the towns, whereas the population of India is, to the extent of 80 or 90 per cent, rural and agricultural. On the whole, the number of eye doctors is greatly inadequate. It is unnecessary to stress this as

it is universally admitted. There is, moreover, great need of an agency, able to come into close and personal touch with the scattered and rural population, find out the "hidden blind" and sufferers from eye disease and get them to the medical centers or, in the alternative, bring medical relief to the villages. The reader must visualize a vast country, mainly agricultural, inhabited by primitive, mostly illiterate, ignorant people, suspicious moreover to some extent of western medicine, living at distances from medical centers, with poor systems of communication. To do preventive or curative work among such a population, there will be needed not only an adequate medical service but a social service as well, an agency to find out the cases, advise and assist them to take advantage of the medical relief available, and to "follow up" the cases. In America, the National Society for the Prevention of Blindness has inaugurated a medical social service, which has, the writer understands, proved very effective in increasing attendance at the hospitals and securing needful continuity of treatment. If this sort of work is found necessary in advanced America, how much more we may imagine is it essential for any useful work of blindness prevention in the much more primitive countries of the East.

Considerations of this kind led to the formation in 1919 of the Blind Relief Association in Bombay. The first centers were opened in the Ratnagiri district in the same year, but for certain reasons the activity of these centers died out. At the same time a few centers were started by the Salvation Army in Gujerat and were financed by the Blind Relief Association. Lack of funds, however, prevented their continuance. Later on more money was raised and, although these centers could not be re-established, Blind Relief Associations were set up elsewhere on a more satisfactory footing. There are now Associations or Centers at Bijapur, Chalisgaon, Bulsar, Anand, Palanpur and Mirpurkhas (for Sind). Work was also opened last year in the Hyderabad State. Most of these associations have been working practically independently of each other, and have their own separate finances, but in 1929 the All-India Blind Relief Association was formed to affiliate the various centers, to consolidate them under one head, and finally to improve and extend the work of blindness prevention and relief.

**Bijapur.**—The Association at Bijapur was started in 1920, and based itself on the Government Hospital at that center. A system of village workers, known now as “field workers,” was inaugurated. These men are given a training for three or four months at the hospital, and are then posted, each to a village or group of villages. Their duties are to compile and maintain complete registers of blind and partly blind people and sufferers from eye diseases in these villages; to send or bring in to the hospital all cases requiring operations or serious cases requiring treatment; to inspect newborn babies during the first ten days after birth for the detection of ophthalmia neonatorum; to maintain registers of all smallpox and measles cases; and to give treatment in the villages to simple cases of conjunctivitis or sore eyes. At the central hospital was stationed a special eye surgeon (an Indian) who was lent by the Government to the Association. At the present time the Association has two such eye surgeons, the second one being the General Secretary of the Association and responsible for the supervision and control of all the work of the village “field workers” in the district. The results are very promising. Before the Association started work in 1920 very little eye work was done in the district. In 1918 only seven eye operations were performed; in 1919, forty-three. In 1920 (the year the Association started work) the operations were 465, and they have steadily increased in number until in 1928 there were 1,991. Similarly with eye cases medicinally treated in the hospital and dispensaries in the district, the number in 1920 was 3,420, and in 1928, seven or eight years after the Association began its work, it was 19,352. The following table shows succinctly the figures:

BIJAPUR

	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928
Operations.....	7	43	465	461	634	894	1,168	1,264	1,702	1,866	1,991
Cases medicinally treated.....	3,420	4,780	7,820	9,693	9,006	11,922	14,248	12,294	17,300	19,452	19,352

At one time there were 77 “field workers” in the district but, owing to lack of funds and the necessary staff for supervision,

these numbers could not be maintained, a selection had to be made, and the Association now maintains 11 such field workers, each of whom has to work in a population of 70,000 or 80,000. The great need now is for the Association to be in a position to greatly increase the number of its field workers. Despite the reduction, however, the field workers in 1928 gave treatment in the villages in cases of simple eye diseases to 26,937 people—so that the total number of cases medicinally treated (at the Central Hospital, at the dispensaries and by the field-workers) was 45,289 against an average of 4,100 before the Association began its work in 1920.

The following are the figures for Chalisgaon, Bulsar, and Anand, the other centers established:

## CHALISGAON

	1920	1921	1922	1923	1924	1925	1926	1927	1928
Operations* . . . . .	4	..	42	961	7,584	3,212	4,831	5,792	9,992
Cases medicinally treated . . . . .	276	2,039	2,720	4,042	3,232	2,982	3,908	4,266	4,519

\* The figures for operations include minor operations, such as sub-conjunctival injections.

## BULSAR

	1920	1921	1922	1923	1924	1925	1926	1927	1928
Operations . . . . .	75	201	244	387	411	525	578	622	653
Cases medicinally treated . . . . .	1,174	3,118	2,885	3,846	3,536	3,662	3,975	3,910	3,207

## ANAND

	1922	1923	1924	1925	1926	1927	1928
Operations . . . . .	142	165	205	35	23	41	47
Cases medicinally treated . . . . .	800	1,266	3,158	1,482	996	795	996

**Sind.**—In Sind the system followed is to employ touring medical officers who visit villages, camp at various places and carry on their operations for a month or six weeks at a time and then move on to another centre. The Association in Sind has now two such touring medical officers, who between them work four districts of Lower Sind including the area known as the "Sind Desert." During 1927 and 1928, one of these touring officers, Dr. Sachanand, held 15 camps in different parts of Lower Sind, dealt with 11,947 patients and performed 1,939 operations.

**Palanpur.**—The Association was started here in 1928, and was not able to do much at first for lack of funds. It maintains, however, one touring medical officer and in the first six months of 1929, 1,784 eye cases were treated at the Hospital or in the area, and 504 operations done. During the monsoon of 1929, the Blind Relief Association medical officer for Sind (Dr. Sachanand) had to be deputed to Palanpur for two months, as Palanpur had lost its own medical officer and could not otherwise procure another. Dr. Sachanand held four camps in the Palanpur area and treated 4,000 patients and did 2,092 operations. This is a sample of the imperative necessity of ophthalmic relief—in this comparatively small area with a population of 206,467 no less than 5,788 eye patients were treated and 2,596 operations done in the eight months.

One of the most fruitful sources of blindness, especially blindness in children, is smallpox. In parts of Russia, we are told in a pamphlet entitled "Work for the Blind in Russia" by H. Jacob Kolonbovsky, the proportion of incurably blind people whose blindness is due to smallpox is 26 per cent. In Egypt, on the other hand, out of the thousands of eye cases examined by the ophthalmic staffs in 1912, only four cases of blindness from smallpox were found, and this was attributed to the efficacy of the public health regulations for vaccination and the enforcement of compulsory vaccination. In India there are no statistics of the proportion of blindness due to smallpox. But it is fairly certain that the proportion, particularly among blind children, is a high one. There is little doubt that if the smallpox patient is medically attended the risk of loss of sight can be effectively met by the proper measures. Lt. Col. R. H. Elliott of Madras writing on this sub-

ject in 1917 says: "I am not disposed to dispute that a certain number of cases of corneal trouble following smallpox may be due to local pustules, but I am confident that the vast majority of cases one sees in India which date their corneal trouble back to an attack of smallpox, are to be attributed to the results of exposure. The patient lies for hours or even for days on the floor of a dusty mud-hut, in muttering delirium or coma, with the eyes turned up; the lower part of the cornea and the adjacent conjunctiva are, consequently, exposed to the dessicating influence of wind, dust and heat and the insults of flying creatures of many forms, and this at a time when nutrition is at its lowest ebb." Such is the picture, only too true, of the conditions under which sickness must be undergone in the villages of India, and unfortunately most smallpox cases, certainly in the villages and even among the poorer classes in the towns, are medically unattended. But the visitation of smallpox cases is one of the main planks of the Association's preventive work. Every case of reported smallpox is seen, and unreported cases found out and a register is kept of visits made up to the time when the patient is either dead or definitely free from the risk of eye infection. Fortunately, in Bijapur, we have been able to obtain the co-operation of the authorities in reporting smallpox cases to our medical officers, and to smallpox has been added measles, which is also a source of serious eye infection. The same measures are taken for measles as for smallpox. It is much to be desired that the Government would add measles to the list of diseases which have to be registered and reported, and that the Health authorities everywhere would institute a system of visitation of smallpox and measles cases on the lines described. Lt. Col. Wright of the Madras Ophthalmic Hospital has recently stated that the control of smallpox would do more for the prevention of blindness than all the ophthalmic hospitals in India. But until the happy day arrives when vaccination has been made as effective in India as apparently it had become in Egypt in 1912, we must continue to strive to combat the results of disease which might be altogether prevented.

In the Bijapur district in 1928 field workers have visited with the greatest promptitude every village reported to be infected with smallpox or measles, and have actually treated 346 cases of small-

pox in which the eyes were affected in some way or another, and kept a watch upon all other cases. But, as will have been seen, it is not only in smallpox and measles cases that this watch is kept and "first aid" rendered. The child is inspected during the first ten days after birth for the detection of ophthalmia neonatorum, and in 1928, it is reported, 19 cases of ophthalmia neonatorum were detected and treated. Thereafter he is to be inspected at least once a month, if possible, up to the age of two.

It is hardly necessary to state that the village field workers who are trained by the Association's medical officers are under their immediate control and supervision. Every visit and treatment is registered, and it is the duty of one of the medical officers, who is General Secretary of the Association, to be constantly on tour, checking the registers in the villages and giving instructions for the more efficient control of the work. There is no eventuality which may lead to blindness, which is contemplated by the Association as outside the scope of its activities. The scheme aims at completeness, and though owing to lack of resources it may fall short of this, the system is there in essentials and may be seen working in the Bijapur district, with such results as have been shown in the figures given above.

It is obvious that the work of prevention and cure of blindness is capable of indefinite extension, not only in the Bombay territory but throughout British India and the States. At present only the fringe of the problem is being touched. It is, however, a question of men and money. It costs something like Rs. 16,000 (\$6,000) a year to do anything effective in a whole district, even on the present scale. There are some 300 districts in India besides Native States. But from an economic point of view alone, quite apart from philanthropic considerations, prevention must pay. It has been calculated that in economic loss, blindness and partial blindness costs India some \$65,000,000 a year.

# The Nurse's Part in the Conservation of Vision\*

Mary Ella Chayer, R.N.

THE public health nurse, in her dual rôle of conserver and educator of health, must interpret into terms of actual practice the findings and principles of health research. Her function in relation to the school is doubly important, since, teaching and helping both parent and child, she is aiding in the sight conservation work of three generations.

IT HAS often been stated that the most important measures for the conservation of vision are the detection and correction of defects, the treatment of eye disease, and the establishment of adequate educational facilities for those needing individual attention. As important as these measures are, they are after all remedial rather than preventive. True conservation consists in prevention of impairment rather than conservation of whatever vision remains after damage has been done. The school nurse should place her greatest emphasis upon helping schools and homes to provide that physical environment which shall best conserve sight. Parents and teachers should not only know what are the best physical facilities, but they should also form the habit of utilizing them to the fullest extent. From infancy to childhood, in fact all through life, there should be an unconscious response to the right environment, and a conscious response to the wrong environment. From the time a child is born his sight should be protected. If he responds only to the right kind of environment in childhood, the wrong environment will disturb his complacency and he will seek methods of restoring it. At present we find both children and adults using their eyes under all kinds of poor conditions and doing nothing about it. The result is that from twelve to twenty-five per cent of

\* Presented at the Annual Conference of the National Society for the Prevention of Blindness, November 17, 1930.

school children have some degree of impaired sight, and practically all adults are wearing glasses after they reach middle life.

Tests of vision of school children reveal the fact that while some children enter school with vision defects, the number increases from grade to grade. It has also been observed that an impairment of vision can be brought about in a relatively short time. For example, after a certain elementary school was destroyed by fire, the third grade children were placed in a nearby church for schooling until such time as their building should be rebuilt. The church had beautiful stained glass windows which kept out most of the light. One month after these children had been placed in the church the nurse tested their vision and found that practically every child had a slight degree of impairment of vision, and over 50 per cent were found to have 20/40 visual acuity or less. The result of this examination was reported to the school administration, and steps were immediately taken toward securing a more adequately lighted room. After a period of four months the children were again tested and it was found that their visual acuity was about the same as that of other third grades of the city. One can only guess at the degree of injury which might have resulted had the children been kept in the poorly lighted room for a longer period of time.

So important is the conservation of vision in the earlier years that the school nurse should work with the public health nurses of the community to the end that together they may help parents and teachers to understand not only the importance of, but elements in good lighting. Many school rooms are still poorly lighted in spite of the effort, for years, to raise the standard of lighting for school buildings. And worse still, some buildings have facilities for proper lighting which are not utilized. It becomes the problem and function of the school nurse to make frequent surveys of school buildings with definite things in mind, such as: Is it possible for the room to be adequately lighted by natural lighting? If not, what arrangement for artificial lighting is probably best for the room? Is the teacher utilizing the opportunities which the room offers? If not, how best can the teacher be brought to appreciate her responsibility? Are the pupils aware of the wrong environment, and are they doing something about it? If not, how can

pupils be taught to conserve their own sight? Specific things which the nurse will notice when entering a room are:

1. Placement of windows. In general, window space should be at least twenty per cent of the floor space and windows should be near the ceiling, as the best light comes from the upper half.

2. Arrangement of shades. As is stated above, the best light comes from the upper half of the window. Two shades should be found on each window, hung in the center, so that the one rolls up and the other down. They should be carefully fitted to avoid cracks of light in the center and at the sides. If cracks of light are present, children should not sit at desks where the shaft of light is shining on the work. Especially in north rooms should the teacher see that the window shades are rolled to give the best light possible. Teachers often adjust shades at the beginning of the session and then become so absorbed in their work that they fail to make the necessary changes as conditions of light change. Teachers should form the habit of adjusting the shades at the beginning of each period and as necessity arises.

3. Arrangement of tables and chairs. In many schools, especially in elementary grades, tables and chairs are taking the place of the stationary desk and seat. This makes it impracticable to have light coming from the left side only. Care should be taken that the tables are placed so that the short side of the table rather than the long side is against the light. In this way children may sit on three sides of the table without facing the light. Care should be taken that children do not obstruct each other's light.

4. Size and character of the writing on the blackboard. Clear, distinct, large writing should be used on the blackboard. Boards should be dull gray or black, and should not be placed between windows. Studies are being made to test the effect of throwing the lower end of the blackboard out three or four inches, making it stand easel fashion. This would seem to be of advantage for avoiding glare.

5. Lighting on dark days. Some rooms are sufficiently lighted on bright days but are too dark for comfort on dark or rainy days. Such rooms should be artificially lighted and the best standards of artificial lighting maintained—namely about eight foot candles of light in all parts of the room.

6. Distance of the printed page from the eye. Children should hold books at the proper distance from the eye, which is from twelve to fourteen inches. Careful note should be made of all those who do not maintain this distance. They may have learned a bad habit which needs to be changed, or they may have an eye defect which needs correction. They should be sent to the nurse or physician for examination and they should, if the habit persists, be referred to the family physician, even though the school examination may not show any defect.

7. Check on children wearing glasses. Children wearing glasses should wear them regularly. Care should be taken that frames are not bent and that glasses are properly adjusted.

Another important step in sight conservation is the control of infections, by immediate isolation from the group of any children showing symptoms of disease, especially of those diseases which are likely to lead to vision impairment, such as measles, scarlet fever, etc. There should be careful removal of foreign bodies from the eye by someone who knows how to do it properly.

Next in importance to proper environment is a survey of all children to discover those who are in need of individual attention. There has probably been too much emphasis placed upon routine surveys and not enough attention has been given to the frequent checking of border line cases, and other cases which need individual adjustment. There should be a frequent check up of children whose visual acuity falls below 20/20. There should also be check up of children suffering from headaches and those having extra-ocular disturbances, such as frequent styes. It is of extreme importance that children who have been absent because of illness should have an eye examination soon after re-admission to the classroom. Their eyes may need to be especially safeguarded until such time as their general physical condition has been restored to normal.

Several articles have been written on the technique of testing for visual acuity, and it will not be necessary at this time to consider methods. Attention should be called only to a few points which are sometimes overlooked. To obtain comparable results from one test to the next it is necessary that the illumination of the eyechart be standardized. This can be done only by the use of artificial lighting. The 60-watt daylight bulb, properly adjusted, has seemed

to give the best results. It should be remembered that the child himself must stand in a good light with no glare, and at a distance of twenty feet. A fifteen foot range does not give good results because the Snellen charts are drawn only to the twenty foot range. The eye should be covered with a card which covers, but does not touch, the eye. Both eyes should remain open during the tests. The preliminary examination is made usually by the nurse, and she refers to the school physician all those who seem to present any abnormal condition. Many schools are inviting and urging parents to be present at the physical examination of their children. Their presence offers the physician and the nurse a rare opportunity to give them first hand information and to emphasize the importance of proper lighting facilities in the home, the lasting value of early correction of defects, and the elements that constitute an adequate eye examination. It is necessary to explain to parents the value of, and the reason for, refraction of the pupil. When they understand this they will seek an examiner who will give such an examination. Following the superficial examination made by the school, if any eye defect is suspected the physician refers the parents to the family physician for further advice as to what eye specialist should be employed. Correction of defects comes easily after this preliminary examination. If the parents are financially unable to employ an expert, arrangements may be made for such clinic service as the community affords.

In the rural communities, where the services of a school physician are not available, the nurse works directly with the parent, urging him to seek the advice of the family physician. The contact with the parent has often been made by home visits, but if the parent can be brought to do something, such as coming to the school for consultation with the nurse, this activity puts him in a more co-operative mood, places upon him a larger measure of responsibility and contributes to a greater degree to his education.

When the nurse is not able to visit the school sufficiently frequently to be of the greatest service in sight conservation, it is the teacher who is forced to assume the larger share of responsibility. The nurse must see to it that the teacher knows the elements of proper physical environment for sight conservation. The teacher should also know how to make vision tests. It will

be necessary for the nurse to pass on this information until such times as adequate instruction is included in teacher training courses. In some situations the nurse has helped the teacher by giving demonstrations of vision testing at county institutes and at other meetings of teachers. In other places the need has been met by carefully prepared bulletins giving explicit directions to teachers so that they have been able to learn by themselves to test for visual acuity and to detect deviations from the normal. The teacher may report conditions directly to the nurse, or she may consult with the parent and ask that the advice of the family physician be secured.

There are some children who need a special adjustment of the school environment before they can profit to the fullest extent by the offerings of education. State schools for the blind and semi-blind have been provided; public schools should have sight-saving classes for those children who cannot be properly educated under less favorable conditions. The nurse has a peculiar contribution to make to children in sight-saving classes. Admission to such a class should be made only on the advice of an ophthalmologist, who has a complete understanding of what the school means to accomplish by this type of class. The nurse needs to interpret the school to the specialist and, in turn, to interpret the findings and the advice of the specialist to the home and the school. There should be frequent follow up of every child in sight-saving classes. The nurse should know when the specialist wants to see the child and should lend her influence toward seeing that child and specialist are brought together whenever necessary. The child with a special handicap may be in need of a longer rest period than other children, or may need to spend shorter hours in the classroom. Teacher and nurse should give more intensive health supervision to these children, each one being treated as an individual. In addition, any child with a handicap is likely to present some degree of maladjustment to life. It is therefore important that these children be wisely guided. The advice of a specialist in child guidance should be sought in making adjustments which will include vocational adjustments compatible to his handicap. Curriculum changes may need to be made to fit the child for self-support. There should be a study of occupations which people with poor sight can pursue with success.

In conclusion may I say that the school nurse has a responsibility, shared with other public health nurses of the community, toward the education of parents in the conservation of vision from the earliest years; that the nurse in schools helps the teacher to utilize facilities offered for sight conservation, and to pay attention to changing conditions of light, to the end that there may result, on the part of the child, an unconscious response to the right environment; that an awareness of wrong conditions is necessary before taking steps with reference to correction; that routine surveys of eye conditions are of little value unless the results are used as a basis for meeting individual needs; that nurse and physician have a unique opportunity at the time of the physical examination to give parents a better opportunity to appreciate the importance of the elements in sight conservation; that in rural communities, where a larger degree of responsibility rests with the classroom teacher, the nurse must help the teacher to an intelligent understanding of this responsibility; that special provision should be made for a child who cannot adjust adequately to the regular school environment.

## Spectacles in the Making

Gertrude Utstein

**G**LASSES have been used for centuries as an aid in seeing; their history shows many changes in styles and materials, but no change—except of more intensity—in the human desire for good eyesight.

**L**ITTLE is known of the early history of spectacles before the thirteenth century; their origin is veiled in mystery, and it is only through Chinese legend that we know of their antiquity. Tradition has it that Cho-Tso, the “Old Man of the Mountain,” who is supposed to have lived in China thousands of years ago, found pieces of rock crystal in dry beds of the beautiful sacred mountain streams and ground them into a pair of lenses with sand from the same streams. For frames he took the shells of the sacred tortoises.

Another legend concerns Confucius and a cobbler. Confucius left his shoes with the cobbler to be repaired, and on his return was surprised to be greeted by an uncomfortable cobbler and a pair of unmended shoes. The reason for this apparent lack of efficiency was due to the activities of the cobbler’s wife, who in a fit of temper had thrown red pepper into the cobbler’s eyes. Now, this unfortunate man had not only sick eyes, but crossed eyes as well. Confucius, so the legend goes, gave him a pair of spectacles which cured both the irritation and the crossed eyes!

Glasses in China were worn not only for visual defects, but for good luck, and for the relief of all sorts of ocular ailments. The Chinese still prescribe and wear brown and black crystals for diseased eyes, imagining them to be a direct cure. Spectacles served too as a badge of superior social status, and, as a result, frames were often worn without lenses to lend a mark of distinction to the wearer.

Crystals were undoubtedly used as a remedial agent in diseases at the time of Confucius and perhaps even earlier, but there is no evidence of their use for refraction until the thirteenth century A.D. As early as 2000 B.C. engravings were cut into onyx and other stones, and these mounted into rings. In some, the figures of men and animals are so fine as to make it obvious that the eye must have been aided by some magnifying agent. Among the ruins of Nineveh, Sir Henry Layard found a lens of rock crystal, plano-convex,  $1\frac{1}{2}$  inches in diameter with a focus of  $4\frac{1}{2}$  inches. This lens, the oldest perhaps in existence, is as expertly finished as a crystal edged in a modern machine. The invention of spectacles for refraction has been attributed by some to Roger Bacon, a professor at Oxford University, who described a lens for the correction of farsightedness. In Germany glasses are referred to in a collection of ballades between 1260 and 1284; and again in a manuscript of the year 1289 we find the passage, "I am so debilitated by age that without the glasses known as spectacles I would no longer be able to read or write. These have lately been invented, much to the benefit of poor old people whose sight has become weak."

In 1303 Montpellier, a French physician, told of using a magnifying glass for reading. Petrarch, the Italian poet who lived from 1304 to 1374, recommended eyeglasses for restoring weak sight. Our own Benjamin Franklin made the first double vision glass in 1784, and Thomas Young, an English scientist, described a lens for the correction of astigmatism in the year 1880.

The introduction of glasses was at first opposed by both priest and physician. Over the grave of a Florentine monk, to whom the invention of spectacles is more generally ascribed, is this inscription: "Here lies Salvino Armato Armati, the man who invented spectacles. May God forgive him his sin." The clergy regarded glasses as violating the divine law that disabilities should be visited upon the aged; and physicians, placing their faith in eye lotions, paid little attention to eyeglasses and even derided their use. Bartisch of Dresden, the most famous oculist of the sixteenth century, recommended an eye wash or the use of a massage, as did other physicians even down to the middle of the nineteenth century. Chinese physicians, however, were an exception. At the end of the eighteenth century nearly all of them wore spectacles

with very large, round glasses, as a means of identification in their profession.

Till the latter half of the nineteenth century the use of glasses was limited. It took time for social approval to be obtained, technical improvements to be developed and the principles of refraction established. Their need, moreover, was not felt as long as books were rare and education restricted to the relatively few. There is little doubt that the main impetus to their extended use was the invention of printing.

There was a rapid development of the spectacle industry after this time. The first makers are reported from Frankfurt-am-Main in 1450; from Strassbourg in 1466; from Nuremberg and Regensburg in 1473. With the development of spectacles as a commercial commodity in the fifteenth century, came the progress of spectacle guilds. The two principal guilds were those of Nuremberg and Regensburg, both in southern Germany. Venice, expert in the manufacture of glass, was another important center for the manufacture of lenses. In England, "The Worshipful Company of Spectacle Makers" was established in 1629, its first charter being granted by Charles I. As the industry grew and the manufacture of spectacles increased with the greater demand, the first makers became associated with other commercial bodies and were classified with them.

In a review of merchants and artisans which passed before Louis XI. of France in 1465, the spectacle makers marched under the banner of the haberdashers and upholsterers! In 1525 spectacle makers were joined to mirror makers, and when, in 1581, Henry III. of France renewed the "Patents of Mastership," the mirror makers, spectacle makers and toy makers were joined in one guild. After the suppression of the masterships, 200 years later, in 1776, and their reorganization in the same year, these craftsmen were reunited to the upholsterers, furniture brokers, gilders of leather, and embossers. It was only in 1770 that French workmen whose work was confined to spectacles and instruments of precision took on the name of "opticians" while yet remaining members of the community of craftsmen, and having the right to use their coat of arms.\*

\* *Some Notes on the History of Spectacles*—Llewelyn Andrews. Transactions of Lancashire and Cheshire Antiquarian Society, Volume XLII, 1925.

Spectacles passed through the "trials of probation to the triumph of approbation." The wealthy went to great lengths to secure the finest glass procurable—lenses from Venice, richly ornamented frames, and bejeweled cases. During the fifteenth century it became customary to picture with spectacles not only characters of dignity and importance, but saints and Fathers of the Church. The oldest known picture, one of Cardinal Ugeone, showing eyeglasses, was painted at Treviso in 1342.

In Spain, spectacles were worn as a mark of distinction in 1685. Their wearers were regarded, in high society, as possessing elegance, distinction, and even superiority. This is particularly interesting since in France, at a somewhat later period though at a time when glasses were still worn in Spain as a mark of distinction, it was not fashionable to wear them in good Parisian society. The Parisian concealed, rather than called attention to, defects and weaknesses of the eyes. It became a breach of etiquette to wear glasses, but the obvious need for them opened the way, in that country, for the use of *lorgnettes*, which were held in the hand and brought to the eye when their owner desired to scrutinize an object or a person whom he could not see with the unaided eye.

Glasses to assist vision were probably first made in the form of a magnifying glass which was used by monks and other learned persons to decipher manuscripts. This was a single lens, framed in bone, horn, wood, copper, iron or lead, with a handle attached. Apparently it was not until some time later that the idea occurred to someone to take two lenses with short handles, to pierce the ends of these handles and then fasten them together with a pin or nail. These could be placed on the nose, in front of the eyes. These riveted spectacles were used during the fourteenth and fifteenth centuries and even up to the beginning of the sixteenth century. They were heavy and clumsy, the frames being formed of two circles of copper, lead, wood or iron. No wonder that their clumsiness caused the common people to regard them as "inventions of the devil!"

Many amusing ways were tried to keep the glasses of the old pinned type or with a rigid bridge from falling from the nose. Some were sewn or tied to the bonnet or cap, and others were tied to the ears by ribbons or cords. It is interesting to note that the

early Chinese glasses were held in place by weights attached to cords running behind the ears! The Chinese exercised their ingenuity further by fastening a little vertical arm with a knob at the end of it to the center of the bridge, so that it could rest on the forehead and keep the glasses the correct distance from the eyes. With a further determination to keep their glasses on their noses, the Europeans later attached a vertical hinged piece to the bridge, which extended up over the forehead and then bent backwards through the hair or under the cap. In 1746 spectacles with hinged side pieces were first advertised by a French oculist as *lunettes à tempes permettant de respirer à l'aise* (spectacles for the temples permitting one to breathe easily). Quite a comment on the early crude eyeglasses!

Another major objection to spectacles was removed by the ingenuity of Benjamin Franklin. He had been equipped with a pair of spectacles to aid him to see words and objects at close range. But he found that while he could see to read very well when he wore the glasses, objects even at a short distance away were in obscurity. He could not see anything at the other side of the room; the faces of those with whom he talked were blurred; he could not take a step with assurance. This was by no means a new condition. It had been a source of annoyance ever since spectacles came into use, but others had accepted the condition as irremediable and had submitted to the necessity of adjusting their glasses when they wished to see objects close at hand, removing them in order to see more distant objects.

Franklin set about to overcome this difficulty. "If," he reasoned, "I can see distant objects clearly with my eyes without the lenses, I should be able to see through a piece of plane glass with equal clarity." The conclusion then was obvious; he would have a portion of each rim supplied with a piece of plane glass and the remainder with a section of a lens of the focal power he needed to read with, and thus be able to see both far and near without having to remove his glasses.

With characteristic logic, having noticed that he raised his eyes when he wished to look away, and lowered them for the purpose of reading, he had the plane glass placed in the upper portion of each rim and the lens in the lower part. The invention was a

complete success. Thus the first bifocal came into being, which has since been followed by a slightly better looking cement variety, then by the invisible and nearly invisible double vision lenses.

The material of frames and the shape of lenses have always been a matter of taste and of fashion. Wood, ivory, bone, horn, copper, lead and leather, as well as gold, silver, tortoise-shell and celluloid, have been used. In the nineteenth century large, round lenses were followed in popularity by small, round lenses, which were, in turn, succeeded by octagonal, quadrilateral, square and oval shapes. In 1840 Waldstein of Vienna devised rimless spectacles, and by 1850 these with "riding bow" temples were in general vogue.

The first lenses were sections of quartz, which were used either to magnify or to aid the weakened sight of the old, and were generally in convex form. Beryl, an emerald of smoke color, was used in the Middle Ages for lenses, and it was from it that the French derived the names *bericle* and *vericle* which later became *besicle*, then *besicles*, the term now applied by them to the complete spectacle. It is probable that the Dutch derived their name for spectacles, *den bril*, from the same stone, and the Germans their name of *die brille*. Spectacle lenses of olden times were not only made of clear pebbles or glass, but were frequently of naturally tinted pebbles or of tinted glass, blue or green.\*

As a protection from excessive light, lenses made of amber saturated in linseed oil were introduced in 1591. Colored glasses were soon substituted and various shades successively came into use. Chlorophyl-green was proposed in 1880 in the belief that the irritating effects of glare are due to ultra-violet rays; euphos (a greenish yellow glass) was introduced in 1907; and recently the Crookes lenses, produced by Sir William Crookes, have become popular. The Crookes lens is a protective glass so nearly colorless that it does not affect color vision.

A comparatively recent and increasingly important use of glasses is as a protection to the eyes of workers in hazardous occupations. As far back as 1870, individual workers in steel foundries, chemical plants and at emery wheels began to wear a heavy type

\**Some Notes on the History of Spectacles*—Llewelyn Andrews. Transactions of Lancashire and Cheshire Antiquarian Society. Volume XLII, 1925.

of spectacle to protect their eyes from the molten steel, the splashing acids of the chemical vat, or the flying particles from the emery wheel. It was not until 1909, however, that heads of industry saw the necessity of equipping every worker in hazardous occupations with these protective goggles. The American Steel Foundries led the way; the other industries have been rapidly following.

The first goggles used for the protection of the industrial worker's eyes were of heavy crude glass, having the frequent disadvantage of distorting vision while protecting the eyeball. Tremendous improvement in goggles for all types of work have been made since the first realization of their value,—the most important perhaps being the use of indestructible glass. Although perfection has not yet been achieved in the design of goggles, the concerted effort of safety engineers, industrial leaders and the manufacturers of eyeglasses is actively focussed upon the problem of saving eyes in industry.

## Editorials

### Medical Social Service in Eye Clinics

**M**EDICAL Social Service in the hospital and the clinic is not very old in point of years but has long since proven itself indispensable. In many institutions the worker is a nurse, but her work is entirely different. At her best she is a sort of a liaison officer between the physician and some of his patients. Patients misunderstand directions, or fear operations, or become sources of danger to others because the overworked doctor cannot spend time in explaining, or arguing, or guaranteeing operative results. Others whose best interests perhaps require long continued treatment become discouraged and stop or flit from one clinic to another, wasting in each the time and the money required in making a new diagnosis, which has perhaps already been done several times. The worker keeps a file of patients who should return, and if they fail—sends for them or goes after them. She knows all about organized charity and can give advice and get assistance if needed. She is able to keep in touch with patients who have been discharged after treatment or operation, so that the physician and the institution can see at long intervals whether the results have been as successful as they seemed at the time of discharge. Her records make possible at any time a check, not only on the relative value of operations and treatments, but also in the relative results of different physicians in the same institution and of different institutions in the same field.

The profession is so new that there is as yet no absolute agreement as to just what her background and training should be—whether she would be more valuable with or without a preliminary training as a nurse—but at least she must have a training in office management and the keeping of records. She must have at least an intelligent though not a profound knowledge of many diseases and the purpose behind the treatment or operation. She must know all the ins and outs of organized charity and have a fundamental knowledge and experience in social case work. Above all,

she must be well educated, forceful, sympathetic and persuasive, and able to keep her position between physician and patients automatically and unconsciously. She must not be so subordinate that she is reduced to a mere errand girl for a masterful chief, nor so opinionated as to have independent ideas as to disease and treatment of patients.

There have been relatively few social workers in eye clinics and hospitals—some of them nurses, some trained social workers, and some untrained but educated and enthusiastic amateurs, but none of them trained for this special work.

In 1930 this group formed a national organization for which the National Society agreed to act as a secretariat permitting the exchange of information and experience through bulletins and correspondence as a substitute for the formal training.

To meet the needs of the local group in New York, the Society assisted in arranging a series of conferences in which some twenty-eight ophthalmologists discussed various eye conditions, especially as regard their social aspects, and other meetings conducted by the social workers themselves with the idea of promoting interest and discussing methods. These meetings have been most successful and it is hoped that they may stimulate similar efforts in other large cities.

For over twenty years the Massachusetts Eye and Ear Infirmary has been developing its efficient and well trained group of social service eye workers, which Dr. Derby, the institution's medical director, believes to be the greatest single advance in prevention of blindness of this generation. So much impressed has the National Society been with the character and scope of the work that for several years it has furnished, at Dr. Derby's suggestion, a social worker who devotes her entire time to that *bête noir* of ophthalmology, chronic glaucoma. With her help he has been able to keep under observation at regular intervals more cases than any one would have believed could be found in any one community, and seems to have demonstrated that every eye hospital of any size must adopt a similar plan, not only regarding glaucoma, but many other diseases where delay is fatal.

So convinced has the National Society become of the value of this work that it is now granting scholarships to a number of carefully

selected young women, who are to be trained at the Massachusetts institution and afterwards placed in other strategic hospitals in various parts of the country, where it is hoped each will be able to organize a department of social eye work and in time train other workers in their turn.

The interest on the part of institutions has been greater than was expected, all the present class having been spoken for long in advance of their graduation.

Our Society expects to watch carefully the progress of the experiment, and in some instances has even agreed to underwrite a portion of the salary for a limited period.

ELLICE M. ALGER, M.D.

### **What is a Sight-Saving Class?**

To old friends of the forward movement for preventing blindness and conserving sight the sight-saving class is a familiar part of many of the more advanced school systems. To new friends it is often a revelation. To both old and new it must ever be a widening and deepening of opportunity, keeping pace with modern ideas and modern progress.

And just what is this opportunity that calls itself by so strange a name as a "sight-saving" class? It is a doorway opening into the world of education and of future possibilities for children who, because of serious eye difficulties that cannot be corrected or cured, are misfits in regular grades; children who need special educational keys to unlock this door—books in a type that they can see, excellent lighting, hygienic seating and, above all, the care of a trained teacher who understands their difficulties and is able to help them to overcome their handicaps.

But there is something illuminating about this door; it opens both ways. It not only leads into a special classroom where all educational media are adapted to the needs of the partially seeing child, a classroom where he may carry on all work requiring close use of the eyes without eye fatigue, but it also opens outwards into the regular grades where, with companions of his own mental age, he may take part in all activities not requiring close use of the eyes. Sometimes eyes improve so much under this care that their owners can stay on the regular grade side of the door for all their work.

Sometimes the opportunity demonstrates that children often considered backward or sullen or self-centered are, after all, as bright mentally, as sweet tempered and as socially minded as their companions, now that they can see something of the world about them and appreciate their relationship to it.

And who are these children who may use this special gate to open the door of opportunity? They comprise a small number; in some communities one child in a thousand, in others all the way down to one in two hundred and fifty. The amount of eye work that each may undertake is determined by an ophthalmologist. Oral instruction is emphasized. These children are able to compete with their normally seeing companions because of the special arrangements made for them, and, with very few exceptions, they follow the same curriculum. Naturally, for so small a group, one class may serve several schools or in some cases a community. Hence a number of grades may be represented and the teacher is able to care for a much smaller number than that found in the regular grades, where the children form a more or less homogeneous group.

The teachers of the first sight-saving classes had to blaze their own trail, but in the present day the way is made easier for those coming into the field. Universities and teacher training institutes in various parts of the country offer courses of training, sometimes during the regular school year, but more often during summer sessions. In the summer sessions of 1931 four universities will offer this special opportunity—Tulane University, New Orleans, Louisiana, June 15–July 24; University of Chicago, Chicago, Illinois, June 22–July 24; State Teachers College, Buffalo, New York, June 29–August 27; Teachers College, Columbia University, New York City, July 6–August 14.

There are now 375 sight-saving classes in the United States, representing 105 cities and 23 states. Among these there is a goodly proportion of junior high school classes, but only a few cities have made it possible for senior high school students to carry on their work under the best conditions. The experimental stage of these classes is past. They have demonstrated their right to exist, but greater efforts must now be made to enable them to meet the more diversified needs, both urban and rural, of the modern generation.

WINIFRED HATHAWAY

## Note and Comment

**Prevention of Blindness in Poland.**—Blindness, caused by lack of proper medical care, or by medical care applied too late, is unnecessary. After the renationalization of Poland, a survey of ophthalmic resources, according to a report on "The Blind in Poland," was found to be extremely insufficient, with only 150 ophthalmologists to serve a population of 22,000,000 people. Since the war, the Polish government has increased the facilities for caring for diseased eyes, and special work against trachoma has been inaugurated. Schools, which have been growing rapidly since the nationalization, are built with the standards of eye health in mind, and part of the building code for new buildings provides for proper lighting for factory and office workers. Propaganda and educational projects are aiding in the attempt to prevent blindness.

The report published by the Organizing Committee of the Polish Delegation to the World Conference on Work for the Blind concludes: "In spite of all these efforts, the Polish Society for the Prevention of Blindness has far to go before it reaches the efficiency of the Society in the United States, where the activity has been aided for many years by contributions from interested private sources. The formation of the International Association for the Prevention of Blindness has encouraged the formation of a Polish Society, whose function will be to contribute to the activity of prevention of blindness in Poland and generally improve health conditions in the country."

**Trachoma, a World Problem.**—Issued from the Press of the Royal Hungarian University is a pamphlet reprinting the lectures given by its professor, Dr. Emile de Grósz, in his recent visit to the United States. Of particular interest was his lecture before the American Academy of Ophthalmology and Oto-Laryngology, Chicago, as president of the International Anti-Trachoma League, on the spread and control of trachoma. The widespread occurrence of trachoma all over the face of the civilized world, its disastrous results, both socially and economically, demand a national and international crusade on the part of all nations.

Among the difficulties which face this fight against the enemy of eyesight is the fact that it is not always possible to diagnose trachoma. The cause of the disease, too, has yet to be authenticated, and while it is undoubtedly infectious, whether it is the bacillus granulosus, the chlamydozoon or the gonococcus, or some now unknown organism which spreads it, is not yet known. But we do know that trachoma spreads, and spreads quickly, through families, communities, and countries. Lack of culture and poverty seems to accompany its growth, for it is more prevalent in those centers where there are found poor living conditions and poverty than in centers where cleanliness and hygienic knowledge are more usual.

Dr. de Grósz recommends for the crusade, on the part of nations and international leagues, these measures:

- (1) Reporting of all cases of trachoma, and frequent census of the trachomatous population through samplings of school children, army recruits, hospital patients, etc.

- (2) Defensive treatment in infected areas, by instruction to local doctors and the use of travelling clinics.

- (3) Central authority to regulate trachoma battles.

- (4) Isolation of cases, in hospitals, clinics, schools.

- (5) Instruction of all medical students in the treatment and diagnosis of trachoma.

- (6) International co-operation.

- (7) Continuous research into causes and treatment.

**Poor Lighting the Cause of Accidents.**—About 3,450 deaths and 450,000 injuries, or about 15 per cent of all accidents, are traced directly to poor lighting, according to the Committee on Light and Safety of the Illuminating Engineering Society. The high cost of compensation, and the additional eighty per cent loss in overhead charges, may be eliminated by installation of adequate lighting systems and keeping them in condition.

**Connecticut Ophthalmia Neonatorum Figures for the Decade.**—Annual reports of the State of Connecticut Board of Education for the Blind, 1929–1930, indicate that ophthalmia neonatorum, once the cause of many cases of blindness which were presented to

schools for blind children, is rapidly vanishing in Connecticut's schools. This is being accomplished through the enforcement of the law of 1921, which made compulsory the reporting of all cases of eye infection in infants, and the administration into the eyes of all babies born in a state institution, or under the care of a midwife, the sight-saving drops of silver nitrate. In the nursery for the blind at Farmington there have been no new cases of ophthalmia neonatorum since 1921. In the elementary school for the blind the number of new pupils blind from this cause has decreased to a lesser extent, but during the past biennial only one new case has been admitted.

The conservation of sight program of this organization continues to increase in scope. In the vicinity of Hartford, 216 children with serious visual defects were discovered in a survey of the sight of the school child. Recommendations have been made to establish a sight-saving class and to obtain a full-time worker to aid the regular public health nurses in their survey of the health of the district. This eye worker will also undertake to spread knowledge of eye hygiene and protection.

**Prevention of Blindness in Missouri.**—The Missouri Commission for the Blind trace, in their biennial report for 1929–1930, the development of prevention of blindness activities from 1915–1930. Although lack of funds seriously handicapped the prevention of blindness division and conservation of sight work during the first ten years, a gratifying progress in preventive work has been made in the past five years, and especially during the past two years.

A revised blind pension law demanded that any person receiving the pension benefits consent to undergo any operation which, in the opinion of the clinic, would cure him of his blindness. This law has materially decreased blindness.

With the first sight-saving class, started in Kansas City, began the active campaign for the conservation of vision. With the help of the National Society for the Prevention of Blindness, demonstrations of preschool eye testing were made and this work inaugurated. Since January, 1929, with a separate department in the Commission for the conservation of vision and the prevention of blindness, diagnostic and operative clinics have been opened, vision tests

have been inaugurated in schools and community groups, and social service workers and trained nurses have been added to the staff.

A special project which has recently been undertaken is an investigation into the causes of blindness. Among adults, the principal causes are trachoma, cataract, optic atrophy, cornea ulceration and glaucoma. Among the younger blind patients, ophthalmia neonatorum, optic atrophy, and congenital cataract lead the list. A survey as yet incomplete of causes of eye trouble shows that among the patients of the clinic refractive errors are the most usual cause for consultation, while trachoma, cataract and glaucoma follow in frequency.

**Joseph A. Stucky, M.D., 1857-1931.**—As the SIGHT-SAVING REVIEW goes to press the National Society learns of the tragic death of Dr. Joseph A. Stucky, of Lexington, Kentucky, zealous worker for many years in prevention of blindness. The members of the Board of Directors of the National Society passed the following resolution lamenting the death of their co-worker:

"In the annals of his native state, Kentucky, there can have been no kindlier or more helpful spirit than that of Dr. Stucky. Were it possible for this body to confer upon him a degree worthy of his service, it would be that of doctor of humanity, for he combined with his art of healing a rare sweetness of personality and an eagerness to be of help that endeared him alike to the humble folk of the Kentucky mountains and to the world's favored citizens.

"To open the eyes of the blind; to unstop the ears of the deaf, this was the mission that earned for him among a stern mountain people, little given to terms of endearment, the name of Beloved Physician.

"In the minds of those who knew him or his work, he will always be the Beloved Physician, to whom the greatest reward of service was ever the opportunity for greater service."

Commenting on the loss of Dr. Stucky, Dr. Park Lewis, Vice-President of the National Society, paid this tribute:

"It has rarely been my good fortune to come in contact with a gentler soul. His was indeed a life devoted to ameliorating the woes of humanity.

"It is now nearly twenty years since my attention was directed to the splendid work which Dr. Stucky had been accomplishing among the

suffering people in the mountains of eastern Kentucky. Some of these victims of trachoma had drifted down to the hospital in Lexington, of which he was the ophthalmic surgeon, and the piteous condition not only of their eyes but of their circumstances strongly appealed to his sympathies. He made a tour of inspection on the occasion of his next vacation into this hinterland. The conditions that he found there so moved him that, with an assistant and two nurses, he made excursions beyond the limits of urban life and spent his vacations in treating, advising and helping these native Americans.

"He found them, as he often said, unlettered but not unlearned. They were the backwash of the Revolution and for the most part bore good old Anglo-Saxon names. It was from this tribe that Sergeant York came.

"Dr. Stucky found them living in huts that could scarcely be called shelters, with four windowless walls, the only opening being a doorway. Through his efforts the federal government later made it a part of its program to establish movable hospitals for the care of these people, when it became evident that the labor was far greater than any individual could accomplish.

"On the invitation of Colonel John McMullen, I made a visit to this district, and rode with him from Jackson, in Breathitt County, up the dry streamways, up the arroyos, far beyond the point at which the railroad ended. There I saw with my own eyes the magnificent work that was being done for these suffering people and the supreme efforts that they themselves were making to secure the assistance.

"Some of them, I was told, walked forty miles to receive treatment for their blinded eyes. One, I remember, was pointed out to me—a bright, clever looking young man who had been wholly dependent because of his blindness, but, having been cured, was self-supporting, self-sufficient and an effective member of the community. This was typical of the work that was done there. Not long since, Dr. McCormack, the health officer of the state of Kentucky, told me that some of these counties that had been what were termed 'pauper counties,' dependents upon the bounties of other parts of the state, had become wholly self-supporting, had established schools, had built houses instead of huts, and had indeed become assets instead of liabilities upon the common community.

"These results came almost entirely through the initiative of my dear friend, Dr. Stucky, whom we have in memory. His was a great life, an inspiration and a stimulus to all with whom he came in contact. Always buoyant, ever hopeful, as someone has expressed it, 'he went through life on tiptoe to the end.' I believe that all with whom he came in contact must feel, as I do, enriched from the wealth of such a friendship."

**Decrease in Blindness in New York State.**—According to a recent *Social Welfare Bulletin*, there has been a notable decrease in blindness in New York State during the past ten years, the figures dropping from one per thousand of the population to one per fourteen hundred in 1930.

**International Trachoma Prize.**—As part of the international effort to find the cause of trachoma, the Hungarian Minister of Public Welfare and Labor offers a prize of 2,000 Swiss francs for original work in the etiology of trachoma. Original or published work may be submitted not later than June 30, 1931, to the Eye Clinic No. 1 of the Royal Hungarian Peter Pazmany University, Budapest. Mr. A. F. MacCallan, Dr. Victor Morax, Professor L. Maggiore, and Professor Carl Prausnitz will serve as judges.

**Ophthalmia Neonatorum Campaign in Pennsylvania.**—That Pennsylvania state health authorities are waging an active battle against preventable eye infections and blindness is seen from the following letter, sent to all county medical society presidents:

Harrisburg, Pa., April 22, 1931.

My dear Doctor:

We regard this as an opportune time to bring before the medical profession of this state a matter which continues to be, as it has long been, a discredit to us as physicians, and an indictment against our social sense. I refer to the failure to carry out provisions of the law regarding the use of a prophylactic in the eyes of the newborn and the due reporting of all cases of "sore eyes."

Every year enough blindness is occurring among babies as a result of ophthalmia neonatorum to rank us among the worst of the states. To allow this state of affairs is a crime against the child primarily and against society as well.

A case of gonorrheal ophthalmia has recently occurred in one of our western counties, where the baby narrowly escaped losing both eyes, and only prompt action on the part of the Sight Conservation Service in the Council for the Blind prevented the worst results.

There are at present in the Overbrook School for the Blind 289 pupils, 51 of them there as a result of ophthalmia neonatorum. There were 45 new entrants last year, and 6 of these were blind from ophthalmia neonatorum.

The use of prophylactic in the eyes of the newborn is mandatory. Sore eyes are reportable. No eye need be lost if proper treatment is given, and prompt reporting is the only way to secure adequate official attention.

I wish to appeal to you to bring this before your County Medical Society once more, in such manner as to arouse interest in the observing of the law. If the attendance is not such that all your members hear the notice at the meeting where the matter is presented, will you be good enough to communicate with the absentees, either sending them a copy of this letter or some other effective message?

The Department is deeply concerned to have this law obeyed and is prepared to enforce it, carrying cases into court if necessary.

Fraternally yours,

THEODORE B. APPEL, M.D.,  
*Secretary of Health.*

**World Conference on Work for Blind.**—The first World Conference on Work for the Blind was assembled in New York City from April 13 to 17. More than 100 delegates from thirty-seven countries as widely scattered as South Africa, Australia, India, Japan and Denmark were present. A large number of the delegates were blind. The World Conference was almost entirely devoted to welfare work for those who are already blind, and exchange of views and opinions were held on many important subjects. The outstanding achievement of the Conference was the formation of a permanent international council for the blind whose headquarters will be in Paris. All interested in the prevention of blindness welcomed the formation of a World Council for the Blind which will, in all probability, work in close co-operation with the International Association for the Prevention of Blindness, which was organized in Scheveningen, September, 1929, which also has headquarters in Paris, 2 Avenue Velasquez.

The ten days following the New York Conference were spent by the foreign delegates in a visit to the cities of Philadelphia, Washington, Pittsburgh, Cleveland, and Boston. In Philadelphia a number of ophthalmologists who were delegates of the Conference visited the Wills Eye Hospital and were guests at a luncheon tended them by Dr. William Campbell Posey. In Cleveland, much interest was manifested among the delegates in the sight-saving classes. In Boston, the delegates who visited the Massachusetts Eye and Ear Infirmary were manifestly impressed with the medical social work carried on in that institution in co-operation with the National Society for the Prevention of Blindness.

Among the ophthalmologists present at the New York meetings and on the trip were Dr. Zahor of Czechoslovakia, Dr. el Kattan of Egypt, and Dr. Merida Nicolich of Spain. The National Society welcomed the opportunity to be of service to the delegates interested in the prevention of blindness, feeling that in this way co-operation was extended with the International Association for the Prevention of Blindness.

## Current Articles of Interest

**Good Lighting—A Safety Efficiency and Economic Measure**, *Safety Engineering*, April, 1931, published monthly by Safety Magazine Publishing Company, New York, N. Y. The demands of safety, efficiency and economy to the worker and the owner require special attention to the lighting fixtures. Even where natural light is usually good, sunless days and rain require the supplementary aid of good lighting fixtures.

Lighting systems are available for all types of work and conditions but care of these reflectors and bulbs is important for the optimum efficiency of the lighting system. Cleanliness of the bulbs and reflectors is vital. Where lamps are inaccessible for ordinary cleaning, a device has been put on the market that permits the cleaner to lower the lamp to the floor and return it in place. This device is adapted to any kind of support and any kind of lamp. Protecting lamps from vibration is important in the efficiency and economy of the plant. Another device which stabilizes fixtures against even the slightest vibration is manufactured by the same company.

**Men Must See Well to Work Well**, G. M. Briggs, *National Safety News*, May, 1931, published monthly by the National Safety Council, Chicago, Ill. At the annual Congress of the National Safety Council one of the most important meetings was devoted to the subject of conservation of the workers' eyes. Facing the graveness of the figures for the past few years, in the number of workers whose eyesight was either seriously impaired or completely destroyed, the Council urged the adoption of measures to aid in the protection of the eyes of industry. A thorough examination of the worker's eyes as he enters work, as well as periodic examination at intervals afterward, will prevent men with serious visual handicaps from undertaking hazardous occupations. The provision of adequate safeguards, in goggles and clothing, will prevent accidents to the eye in occupations where these are likely to happen. In some plants, the workers at emery wheels, chemical vats and about the steel cauldrons are provided with goggles and masks;

in others, every one, no matter what his occupation, must wear goggles in the plant, to protect his eyes from the unexpected accident.

The exhibition, upon the bulletin board, of goggles which have been pierced or shattered, reminding the workers of eyes which escaped probably fatal injury, is a most pointed method of teaching men the need of wearing goggles. In the 583 plants which co-operated with the National Safety Council and the National Society for the Prevention of Blindness, 7,411 workers escaped partial or complete damage to their sight, saving millions of dollars to employers in compensation and replacement, and as many more to employees in wages.

**Golf, Glasses and Glare**, Henry L. Langworth, *Hygeia*, May, 1931, published monthly by the American Medical Association, Chicago, Ill. A timely hint to golfers, as well as others who find that playing games in the open air and sunshine does not always bring them the great physical benefits which they expected, is this article, stressing the need for eye examinations as a regular part of health routine, and the advantages of protection from the strong rays of the sun while enjoying its undisputed benefits. Hats, eye shades or lightly tinted glasses would remove the dangers of strain from glare and increase the value of this form of out-of-door exercise.

**Has the Navy any Ophthalmic Sequelæ?** F. C. B. Gittings, M.D., *Journal of State Medicine*, April, 1931, published monthly by the Royal Institute of Public Health, London, England. With the possible exception of trachoma, there are no cases of blindness among men in the Royal Navy which may be laid to the hazards of service. Of the many cases of eye trouble and strain which have been reported, none of them could be said to be the result of service; in the navy, as in civilian life, the eye undergoes changes in refractive ability.

**The Protection of Eyesight in the Factory**, F. de Lapersonne, *Review and Information Bulletin of the League of Red Cross Societies*, January, 1931, published monthly by the League of Red Cross Societies, Paris, France. The author presents the status of eye hazards in industrial occupations in France, pointing out that the frequency of eye accidents is particularly high in the metal

industries; where flying sparks or filings enter the eye there is a fifty per cent chance of permanent blindness. He points out the danger of careless treatment for a foreign body entering the eye, emphasizing the necessity of having the particle removed under sanitary conditions by trained experts rather than by fellow workmen. Some of the measures he suggests to reduce the hazards in industry are the wearing of goggles and protective devices; the examination of the eyes before employment; the early treatment of infections of the lacrimal tract, eyelids and conjunctiva; adequate natural and artificial lighting to prevent accidents and avoid eyestrain; and a securing of the intelligent and wholehearted cooperation of the employees in utilizing safety provisions.

**The Laboratory Passes Judgment**, Marcella Carter, *Hygeia*, May, 1931, published monthly by the American Medical Association, Chicago, Ill. The author, a laboratory technician, by giving interested attention to her work, in spite of temptations for doing a routine job, tells how she received her reward when she heard that, on the strength of her extra care, a baby was saved from blindness and another child got its chance for sight.

**A Program for 100 Per Cent Eye Protection in Industry**, Louis Resnick, *Safety Engineering*, April, 1931, published monthly by the Safety Magazine Publishing Company, New York, N. Y. Author describes the formulation of a self-appraisal for safety engineers and other executives concerned with the protection of the eyes in industry undertaken by the National Society for the Prevention of Blindness. The appraisal questionnaire should help safety engineers see just how near they stand to protecting the eyes of the workers to the fullest extent, and stimulate them to increasing industrial protection. The questionnaire dealing with the plant, the worker, and the job is still in the process of development and the National Society for the Prevention of Blindness would welcome any suggestions and criticisms for its improvement and utilization. Only the plant which can answer each of these questions in the affirmative can be called one hundred per cent perfect in eye protection.

## National Society Notes

AT THE last meeting of the Board of Directors of the National Society, the following were appointed as members of the Board of Directors: Miss Mary Antoinette Cannon, New York School of Social Work; Dr. A. B. Meredith, Professor of Education, New York University; and Dr. John M. Wheeler, Professor of Ophthalmology, Presbyterian Hospital, New York City. Dr. Meredith until recently served on the Advisory Committee of the National Society and is a member of the Board of Editors of the Sight-Saving Review.

The National Society accepted with regret the resignation of Mrs. Corinne Roosevelt Robinson as a member of the Board of Directors and appointed her as one of the honorary vice-presidents in recognition of her years of interest and activity in the National Society.

\* \* \*

At the request of the New York Tuberculosis and Health Association, staff members of the National Society talked over the air on some of the aspects of conservation of vision. Mr. Lewis H. Carris, managing director, spoke on "Eye Safety in Childhood"; Dr. B. Franklin Royer, medical director, talked on "Babies' Eyes 'Neath Summer Skies"; Mr. David Resnick, director of publicity, discussed "Eyes in Athletics"; Miss Eleanor P. Brown, secretary, gave a short talk on "Making the Eyes Bright for School." Mr. Louis Resnick, director of industrial relations, was requested to speak on "Opportunities for Saving Eyes in Industry," by the Labor Union Safety Committee appointed by Governor Roosevelt. Although the National Society has no regular time on the air, through its co-operation with other organizations its message reaches many thousands of the "unseen audience." Other sight conservation talks will be given by the Society during the summer.

\* \* \*

On a trip which extended over two months, Miss Mary Emma Smith, director of nursing activities of the National Society, visited

centers of South Carolina, Georgia, and Louisiana, demonstrating materials and methods of preschool vision testing before Parent-Teacher groups, public health nurses, student nurses and teachers-in-training. A special visit was made in Savannah, Georgia, during the Conservation of Vision Week, April 20-25, when Miss Smith joined Dr. Royer in assisting the Georgia Association of Workers for the Blind in their state-wide campaign for saving sight. At the Convention of the National League of Nursing Education, held in Atlanta, May 7, Miss Smith led a round table discussion on conservation of sight at which Dr. Royer read a paper.

\* \* \*

As representative of the National Society for the Prevention of Blindness, Miss Eleanor P. Brown has made several visits to Boston to participate in the course of training for medical social service workers in eye clinics supervised by Miss Amy G. Smith at the Massachusetts Eye and Ear Infirmary, under the auspices of the Committee on Training Medical Social Workers for Eye Service. The course, from April 1 to July 1, is the first of its kind to be undertaken; other courses will follow during the coming year.

\* \* \*

Mrs. Winifred Hathaway, the associate director of the National Society, has made short visits to Chicago and outlying centers, to South Bend, Indiana, and Detroit, Michigan, as well as to Buffalo and Syracuse, New York, to help solve through her broad knowledge of the field the problems of sight-saving class teachers and supervisors in those localities. During the summer, Mrs. Hathaway will give the course for training sight-saving teachers at Teachers College, Columbia University, New York City, and is on the staff of special lecturers of the University for the summer session.

\* \* \*

The National Society was represented at the World Conference on Work for the Blind, held in New York from April 13-19, by Mr. Carris, Mrs. Hathaway, and Dr. Royer. Interested in all of its

sessions, the staff members of the National Society participated most actively in the round table conference on "Prevention of Blindness and Saving Sight," led by Mr. Carris, after a special session devoted to the prevention of blindness, at which Mrs. Hathaway read a paper on "Sight-Saving Classes."

## Book Reviews

THE MOVEMENTS OF THE EYE IN READING. By M. D. Vernon. No. VIII. Reports of the Committee upon the Physiology of Vision, Medical Research Council. London: His Majesty's Stationery Office, 1930. 45 p.

A recent study of eye movements in reading comes from the psychological laboratory of the University of Cambridge. In this investigation the author has set up an apparatus which differs in some respects from the kinds of apparatus for measuring eye movements which have been used in America. The diagrams of the apparatus, which are given on page 8, will be of interest to the technicians in American laboratories. The use of prisms for deflecting the beam of light has made it possible to place the camera considerably above the level of the eyes, which permits the selections being read to be placed below the camera. The focussing devices are quite simple and the timing device is operated by a clock-work marker. The speed of the film is not given except for the statement that it "was not great enough for the accurate measurement of the duration of individual movements and fixations" (Page 10). This seems to the reviewer to be a very marked limitation of the apparatus, since the interpretation of reading records frequently hinges upon the possibility of plotting in detail each of the fixations.

The experiment conducted by Miss Vernon consists of two major parts. First, a series of records was taken of the voluntary movements of the eyes from point to point, with the intervals between the points ranging from shifts of five degrees to twenty degrees. The subjects also were required to fixate steadily for a period of twenty seconds each on a series of points on a screen. Supplementing this rather formal measurement of eye movements a second series of records was taken of the reading of various types of material. Samples are not given of the materials read, which makes it impossible for the reviewer to know just what was used. In view of the fact that the film moved too slowly to record the time of the different fixations separately, the basic data for the

study are given in terms of reading time per line in seconds and number of regressive movements per line. The reading time per line could have been figured equally well by much simpler methods than photographing eye movements, so that the only contribution of the technique was the measurement of regressive movements.

Only nine subjects were used in the entire investigation, eight of these being graduate students in psychology and one being a man "with some knowledge of psychology but with less education and practice in reading other subjects."

Records were also taken, following the reading, of the introspection of the subjects, particularly as related to affective and connotive reactions. These introspections were later compared with the objective data from the photographs of eye movements.

A number of conclusions were stated by the author with which the reviewer can hardly agree. For example, on page 34 the statement appears that "the number and duration of the pauses were, on the whole, inversely proportional." This relationship is very rough even for the nine subjects which the investigation covered, but data from the Chicago laboratory would lead the reviewer to believe that the relationship between these two functions is much nearer a zero correlation than the negative relationship which was described. On page 35 there appears a statement, "with certain exceptions inaccuracy of voluntary movement and of return movement in reading and unsteadiness of voluntary fixation are correlated with short movements and fixation pauses in reading, and that accuracy of voluntary and return movement and steadiness of voluntary fixation are correlated with long movements and fixation pauses in reading." The data presented from the limited group of subjects are far from convincing on this point. This is particularly true in view of the fact that the steadiness of a voluntary fixation is conditioned very much by the center of attention; that is, if a subject is asked to focus a dot for a given period of time, as in the case of this experiment, frequent oscillations in the fixation will always be apparent, but if a subject is adding a column of digits in arithmetic, where the attention is focussed upon the central processes rather than the perceptual processes, one will find fixations with absolutely no variance for eight seconds or longer, a type of eye reaction which the reviewer has never observed in any study of reading.

In the general conclusions Miss Vernon disagrees with the rather generally accepted fact in America that "the rate of reading is a function principally of training and of the habits acquired by use, and that the most rapid and regular reading was shown by the mature reader with fairly easy material, when he was attending to the content" (Page 42). Miss Vernon proposes that the emotional factors and interest factors which govern the reader are of greater importance. There is no doubt that with either training and maturity held constant or emotion and interest factors held constant variations in either set of factors will influence the reading. The conclusion which Miss Vernon has drawn is primarily on introspective evidence from the nine subjects used. Before modifying the general view which was previously referred to the reviewer would like to see a much larger body of objective evidence to support the introspections which were given. Furthermore, with any given type of material, different degrees of training and habit show regular gradations from the stage of beginning to read to mature reading. The fact that at any particular level of reading ability increases in number of regressive movements will result from changes in the degree of interest or purpose which motivates the reader, in no sense obliterates the fact that maturity in reading may be measured by changes in the number of fixations and regressive movements per line and in the duration of fixation pauses.

The study is one which any student of eye movements should read. The small number of cases makes a decided limitation in the importance of the conclusions which are drawn, and an extension of the experiment should certainly be made with children of various ages.

G. T. BUSWELL

SOCIAL WORK YEAR BOOK, 1929. Fred S. Hall and Mabel B. Ellis, editors. New York: Russell Sage Foundation. 600 p.

The *Year Book* is the first publication in which a compilation of organized groups engaged in social work in the United States has been attempted, and includes a descriptive roster of national agencies. It merits the attention of those concerned with prevention of blindness and conservation of vision in so far as any group

directly responsible for furthering a program to prevent blindness soon confronts problems closely allied to the field of other social work organizations. Success in any specialized field depends upon how wisely and how well existing agencies are used and activities are dove-tailed.

Some of the topics discussed in the *Year Book* which might well be studied in their relation to prevention of blindness and conservation of vision are Industrial Accidents, Safety Education, Alcoholism, Public Health Agencies, Maternity and Infant Hygiene, Child Welfare Activities, School Hygiene, Clinics and Out-Patient Departments, and the Blind.

Each article includes a definition of the field, history and present status, and developments and events during 1929. Contributors to the *Year Book* are leaders in their respective fields, and the references which they have listed for consultation provide important bibliography for study.

FRANCIA BAIRD, R.N.

MANUAL OF THE DISEASES OF THE EYE: FOR STUDENTS AND PRACTITIONERS. By Charles H. May, M.D. Thirteenth edition, revised. New York: William Wood and Company. 1930. 458 p. ill.

Some thirty years ago there appeared a small textbook on ophthalmology by Dr. Charles H. May. It was not written for ophthalmologists nor was it intended as a substitute for the larger textbooks. It was specifically prepared for students and general practitioners.

Ophthalmology was in that day as in this supposed to be the nearest to a pure science of any branch of medicine. There were only a few men who practised it as an exclusive specialty, most ophthalmologists even in the larger cities including with it the ear or the nose and throat. Most general practitioners, then as now, when appealed to, were apt to say, "I know nothing about the eyes," or "I never touch the eye," while the teaching of the student often left him with a much better idea of where to refer his eye patients than what to do for them himself. Dr. May's little book offered the student a framework of ophthalmology on

which he could build: from which he could get a correct and intelligent idea of what it was all about before he began to study it in detail. It will serve that very purpose today.

Dr. May believed that the general practitioner ought to treat the commoner eye conditions of his patients which did not require special knowledge or instruments, and from the first these were the conditions on which the emphasis was placed in the way of unusually profuse illustrations, careful description, differential diagnosis and conservative treatment. There were other conditions which the family physician ought not to handle under ordinary circumstances but of which he ought to have an intelligent knowledge; operations and treatment which he need not know in detail but of which he should know the purpose and the plan and the prognosis. Much less emphasis was placed on the rare conditions.

The little volume was a great success from the start, a second edition appeared the next year and others have followed ever since at brief intervals, many of them having been reprinted several times, until this, the thirteenth, which lies before us. In each the original plan has been rigidly followed; more and better illustrations of the common things, a careful condensation of the text, a regular elision of the obsolete and an inclusion of the new as fast as it has become accepted. We note for instance a short chapter on the slit lamp and the corneal microscope, not enough, to be sure, to teach their use but giving a clear idea of their purpose; on the Gonin operation for retinal detachment, which seems to have proved its utility; note that over the world as a whole the trephine operation for glaucoma is beginning to lose ground to other methods. It would be difficult indeed to write a better book for the purpose for which it was intended. But meantime its public has expanded, for it meets no less well the needs of the lay workers in the field of public health, the nurses and the social service workers who need a brief intelligible book about the eye.

The book has been as popular abroad as at home. There have been six British editions sponsored originally by Claud Worth. It has been translated into Spanish, French, Italian, Dutch, German, Japanese and Chinese, some translations appearing in many editions. It has been the best possible example of the benefits of

mass production in ophthalmic publications. The abundant illustrations and numerous colored plates, often better than those of large text books, would be simply impossible in a book with a small circulation.

Certainly from the standpoint of prevention of blindness, which from day to day depends chiefly on the wide dissemination of present knowledge, no more useful book was ever penned.

ELLICE M. ALGER, M.D.

THE FOUNDATION OF HEALTH: A MANUAL OF PERSONAL HYGIENE FOR STUDENTS. By William Barnard Sharp, S.M., M.D., Ph.D. Third edition, revised. Philadelphia: Lea and Febiger, 1930. 308 p.

This text is intended for use in the early college years. It is based upon the courses prepared by the author for junior college students at the University of Chicago and for pre-medical students at the University of Texas.

The book presents, in inclusive manner and compact form, the essential scientific information which forms the basis of hygienic practices. After a general introduction, the hygiene of the various functional systems is presented, and in the final chapters there is consideration of some matters of general health interest, such as the "Hazards of Childhood," "Health in the Home," and "The Modern Health Movement." It is largely in these last chapters that this present edition differs from the previous ones.

The author states that his object in presenting such a wide range of material in such compact form is "the clarification of the perspective of an extremely broad subject to the lay mind, and the presentation of hygiene as influenced by all the medical sciences, briefly, and without distorting proportions or obscuring essentials with detail." These objectives seem to have been realized. The material is scientifically accurate, up-to-date, and presented with unbiased authority. The book should be useful as a reference for the lay reader or as a text for the pre-medical student. As a text for junior college students in general it is of doubtful value. The approach is too logical and too little psychological, and the content is of too factual a nature.

In such an inclusive picture of hygienic practice, the amount of space devoted to one topic must necessarily be very limited. The discussion of the care of the eye covers five pages and includes the following topics: vision, accommodation, squint, eyestrain, refractive error, visual aging, excessive glare. The chapter on "The Membranous Covering" has two pages on "Infections of the Eye, Conjunctivitis, and Foreign Bodies in the Eye." Except for the use of a glossy paper, the book is well set up from the point of view of the general standards for reading materials.

MARGARET PHELPS

THOMAS D. WOOD, M.D.

TRANSACTIONS OF THE INTERNATIONAL OPHTHALMOLOGICAL CONGRESS, HOLLAND, 1929. 4 vol. (*Continued from March issue.*)

That the crusade against trachoma is launched with the enthusiastic support of many devoted workers in clinics, hospitals and laboratories, and with the co-operation of officials of many governments, is indicated by the space given to this subject and by the response from all who have a place in their hearts for the suffering millions in all parts of the world.

In the first number of this REVIEW, Dr. Park Lewis reviewed a book by Morax and Petit which contains more information than can be given in these pages, and to repeat what Dr. Lewis has so admirably summarized would be superfluous.

There is romance in the quest for the cause of this disease which, as Dr. Harvey J. Howard has stated in the Proceedings of the 1929 Annual Conference of the National Society for the Prevention of Blindness (p. 123), afflicts 100,000,000 people in China, while other countries in Asia and Africa have even larger percentages of the population infected, and there is a heroic quality in the response from many countries most afflicted.

In the summary entitled, "The Trachoma Map of The World," Wibaut, of Amsterdam, in "XIII Concilium Ophthalmologicum, 1929, Hollandia," Vol. III, states:

"Although in many countries the trachoma situation is a terrible one, there is no reason, so far, for too pessimistic an outlook. Even in the most affected countries (Egypt, Palestine), the fight against

trachoma does not seem to be without effect. Apart from direct campaign, the progress made in the improvement of social conditions and education tends to a decrease of the disease. Before we review the different measures we must affirm that treatment on as large a scale as possible is the alpha and omega of attack and prophylaxis."

The measures generally advocated are: control of the frontiers; compulsory notification; examination and treatment of school children; examination and treatment of recruits; more physicians, more oculists, more hospitals and free treatment; general hygienic measures; increase of general welfare; scientific investigation; and international collaboration.

The very important contributions of Dr. Harvey Cushing and Mr. Gordon Holmes on the subject of the diagnosis and treatment of suprasellar tumours are well worthy of their place in this distinguished group of papers. Although the work of these men, who are pioneers in the field of neurological surgery, belongs essentially in a special field, it is, as Dr. Cushing well states, "a place where ophthalmologists and neurologists have long had a common place of meeting; and now that roentgenologists, endocrinologists, rhinologists and neurosurgeons have begun to travel the same way, the need, either of a traffic officer or a system of therapeutic stop-and-go signs, begins to be apparent. All will concede that the ophthalmologist has the right of way, for his is the oldest of the specialties concerned; and yet the neurosurgeon who represents the newest of them need not be unduly apologetic for his presence in the traffic and for occasionally sounding his horn." It would be interesting to review these papers, but it is quite impossible in this place, nor would it serve a useful purpose in this REVIEW.

Throughout the two volumes of scientific contributions there are numerous papers of great clinical interest, and in some cases, in addition to those that have been mentioned, there are contributions of pathological value.

In an additional volume of reports on the standardization of vision, the following contributions may be mentioned:

"Standardization of Visual Acuity," by Prof. Marcel Dufour, Nancy, and a similar report by Prof. Elschnig, Prague, both of which offer material for careful study.

The question of perimetry is treated adequately by H. Lauber,

Vienna, H. M. Traquair, Edinburgh, and Luther C. Peter, Philadelphia.

Other papers are more essentially of technical interest, which need not be mentioned in this place, including an essay on "Light Sense," by Ovio, with numerous references to literature on the subject.

In this volume will also be found a series of reports which are exceedingly suggestive and offer material for careful study for those who are interested:

In a report upon the unification of visual requirements for aviators, chauffeurs, railroad employes and sailors, the papers of Mr. McMullen on the methods of testing visual acuity, and of the field of vision, by Dr. Arnold Verrey; of the sense of relief or depth, by Rene Onfray, are especially stimulating.

The testing of the color sense, among other points, shows divergence in various countries, and so much need of co-ordination that it is to be hoped these important questions will be studied again, and at some future time that a comprehensive result may be reached.

A field which, under the title "Psychotechnique" (Dr. Arnold Verrey), offers valuable suggestions for the examination of those who bear the responsibility not only of their own lives, but of others, in the growing fields of land and sea and air. This paper should be read by all who are interested in testing aviators, chauffeurs, and engineers. The idea seems to have been developed especially in Paris and in Berlin, and should be of universal interest. Among the conclusions of the Commission may be stated briefly the following general rules:

The visual examinations should always be made by oculists, or, in all cases, by physicians who have a special knowledge and who have had special ophthalmological training.

All examiners should know exactly their own field of vision.

The examination of the color vision should only be made by those who themselves have a normal color sense.

All pupillary reaction should be noted at each examination.

For the visual acuity, the Snellen cards at 5 meters, lighted at least with 30 lux.

The fields of vision should be always mentioned. The digital method suffices, but an apparatus should be used in case of any hesitation. Ex-

ceptions to this: aviators, conductors of public vehicles, for whom a perimetric chart should be attached to the report of the examination.

In conclusion an interesting report is made by Prof. Lindner, of Vienna, and Dr. Parker, of the University of Michigan, on the uniformity in the program of ophthalmology for doctors in general and future ophthalmologists.

COLMAN W. CUTLER, M.D.

THE WORLD OF THE BLIND. By Pierre Villey, translated by Alys Hallard. New York: The Macmillan Company, 1930. 403 p.

The world of the blind! What ideas do these words call up in the mind of the uninformed sighted person who meets, possibly for the first time, a fellow creature deprived of physical vision! Many of us have reason to suspect that little at all in the shape of ideas is really present to this mind. Surprise there may be, pity almost certainly, bewilderment and mystification sometimes, but clear, logical deduction little or nothing. There is, indeed, great need that the public should be told that the blind do live in a world and that that world is, after all, not remarkably different from that inhabited by the majority of mankind. And who could better do the telling than Professor Pierre Villey of Caen, France, without doubt the greatest living blind man of letters and also one of the greatest authorities on the history, psychology and education of the class of which he is so distinguished a member? Also what better title could be chosen for his work of instruction than that formed by the words which introduce this inadequate review? Professor Villey has shown his keen insight into what his task implies by calling his book *The World of the Blind*. "The blind are victims of the ignorance of the public," he says, and he considers it his duty (and such indeed it is) to substitute knowledge for ignorance because only in knowledge is there the possibility of correction.

Professor Villey has, in this first comprehensive work in a series (*The World of the Blind* first appeared in 1909, I believe), treated his subject with that thoroughness, erudition and style which one would expect of the author of *The Sources of Montaigne*. And though the book comprises, in its present edition, nearly four hundred pages, one is struck with the complete absence of padding.

Every word is necessary and every word goes home to its mark. The whole world of the blind is indeed circumnavigated and thoroughly explored. Of course, the intelligent and observant blind reader will not find himself always in complete accord with deductions drawn from the author's personal experience or the investigations of others. But this is inevitable. Effects whose causes cannot be absolutely determined but must be inferred or arrived at by most minute and painstaking experiment inevitably fall short of absolute demonstration.

In many respects the last divisions of *The World of the Blind* (section 4, "Indications About the Affective Life," and section 5, "Psychology of the Blind in Society") are full of major interest to the reflective reader. These sections deal directly and definitely with the inner life of the blind and its reaction on their attitude to society. Here again I find myself slightly at variance with some of Professor Villey's conclusions. But perhaps, after all, my difference of opinion is merely a difference of light which makes me see the picture under different conditions from those present in the mind of the artist who painted it.

In the section on the psychology of the blind in society, we find once again the complete normality of the writer of *The World of the Blind* and his belief that his fellow citizens in that world can and should be as sane and normal as himself. In this he is right. He is still more right when he points out that the attitude of the blind in society depends upon the attitude of society toward the blind. All observant blind people today are of opinion that the real solution of the problem facing the blind is social in its major aspect. Society must learn to take blind people for what they are, making only those allowances involved in the slowing down of industrial output, differences of educational opportunities, etc., but realizing that mentally and spiritually a blind man is, or may be made, every whit as normal as his sighted brother. This is, after all, the statement and the plea of *The World of the Blind*. Since the appearance of this work no one can claim to be well read in the literature of the subject without being familiar with its contents. It is at the same time a monument and a guidepost. Let us admire its beauty and follow its directing arm.

S. C. SWIFT

### Briefer Comment

HYGIENE OF THE EYE. Harry Gradle, volume 7, Health and Life, edited by Dr. Morris Fishbein. Chicago: Manning Publishing Company, 1931. p. 9 to 22.

As a part of the "Health and Life" series, published in eight volumes, these twenty-four pages afford a half-hour consultation with the professor of ophthalmology of the University of Illinois Medical School, in which the lay reader is agreeably introduced to an understandable explanation of the mechanism of the eye, its refractive variations and irregularities. The author sensibly omits any discussion of eye disease, although he warns the reader that any slight inflammation of the eye or lid is sufficient symptom for consulting a physician, who may tell whether it warrants the advice of an ophthalmologist. Sight conservation is served in the sections on "Light for Reading," "Removal of Foreign Matter," and "Routine Cleansing."

THE PRESCHOOL CHILD, Child Study Outlines, prepared by Elsie H. Langsdorf, Chairman of the St. Louis Council for Child Study and Parental Education. Published by the National Federation of Temple Sisterhoods, 1930. 140 p.

This book presents in outline form the application of religious principles to present-day knowledge of physical and mental health. The outlines aid the prospective leader in bringing into play the greatest co-operation and contribution of the mothers. Mrs. Langsdorf has succeeded in utilizing the best material in a broad field, and in presenting it concisely and forcefully to the reader.

MODERN LIGHTING, Frank C. Caldwell. Engineering Science Series. New York: The Macmillan Company, 1930. 386 p.

A comprehensive picture of the problems and methods of modern lighting by artificial means is presented in this recent volume on illumination. Basic theory and units, requirements for good lighting, light sources and modification, measurement of illumination and design of light systems, present the fundamentals of illuminating problems. Specific systems are discussed in chapters of industrial lighting, lighting for offices, exhibits, homes and schools,

streets and for signs and signals. Although the book is comprehensive in scope, the material is a unification of much that has already found its way into engineering magazines. Of interest and value to the layman in light engineering problems, or to the student of engineering whose interest in lighting is secondary, it will not add to the information of the initiate.

TEN YEARS OF THE PUBLIC HEALTH INSTITUTE OF CHICAGO. Annual report of the Public Health Institute of Chicago, 1930. 36 p. Anyone interested in sight conservation and prevention of blindness is aware of the importance of eliminating venereal diseases, which are a cause of much blindness and damaged vision. This report traces the history of the Public Health Institute of Chicago, which, ten years ago, when it first opened its clinic for the treatment of venereal diseases at cost, received 77 patients a day. Today 1,300 people come to the Institute for examination and treatment of venereal disease. It has grown from a small organization with one attending physician to be, with its four clinics and thirty-four physicians, the largest venereal disease clinic in the world. But the figures of physical growth cannot give any picture of what it has done, through its educational work and newspaper publicity, in educating people in the dangers of venereal disease, and in teaching them the necessity of seeking prompt and reliable medical attention.

LIGHTING FOR SEEING. By M. Luckiesh and Frank K. Ross, Lighting Research Laboratory, General Electric Company, Nela Park Engineering Department. 1931. 47 p.

Systematized glimpses of scientific investigations on light, lighting and vision and an interpretation of this material into terms of lighting practices. A well-presented study of the scientific facts back of the most efficient type lighting systems. Factual and valuable material for lighting engineers, its clear and simple presentation makes it interesting and understandable reading for the layman.

STUDIES IN ILLUMINATION, Public Health Bulletin No. 197, on "A Study of the Loss of Light Due to Smoke on Manhattan Island, New York City, During the Year 1927, Especially in Its

Relation to the Nature of the Weather, the Relative Humidity of the Air, and the Velocity and Direction of the Wind."

Description of materials and methods in measuring the loss of sunlight over New York City caused by the ever-present smoke and soot. Taking two points in the city—one over a congested manufacturing area, the other in lower New York Bay—it was found that at the same time the sunlight and natural illumination for the industrial area fell considerably below the amount for the lower bay. Loss of light depends on the altitude of the sun, the nature of the daylight, the relative humidity of the air and the velocity of the wind. The average percentage loss of light is greater for cloudy than for clear days. This study, from a prevention of blindness point of view, will be of particular interest to illuminating engineers who must consider sources of natural as well as artificial light.

## Contributors to This Issue

**Dr. J. Milton Griscom**, professor of ophthalmology, Graduate School, University of Pennsylvania, Philadelphia, is also editor of the *Transactions* of the American Ophthalmological Society. His many contacts with children have given him a practical viewpoint in looking forward to a greater prevention of blindness.

---

**Mr. Louis Resnick** is director of industrial relations of the National Society for the Prevention of Blindness, and co-author of *Eye Hazards in Industrial Occupations*. He was formerly editor of the *National Safety News*.

---

**Miss Louise Rush**, a teacher in the sight-saving class in Toronto, utilized her year as exchange teacher in the "myope classes" of Glasgow to add not only to her own information but to the collective information of sight-saving class teachers in America, before whom she first gave the paper which she writes for the SIGHT-SAVING REVIEW.

---

**Mr. C. G. Henderson**, President of the All-India Blind Relief Association, retired from the Indian Civil Service, has spent eighteen years in work for the blind and prevention of blindness in India. Recently he was a visitor in the United States as a delegate to the World Conference on Work for the Blind.

---

After twelve years of experience as a public health nurse specializing in school work, **Miss Mary Ella Chayer, R. N.**, may speak with authority on the duties of the school nurse in conservation of vision. At present Miss Chayer is an instructor in the Nursing Education Department of Teachers College, Columbia University.

---

**Miss Gertrude Utstein**, of the junior staff of the National Society, has been engaged in library research and special feature writing. Her article appearing in this issue of the REVIEW is the result of preparing an answer to many inquiries regarding the history of spectacles.

---

A member of the Board of Directors of the National Society, **Dr. Ellice M. Alger**, is professor of ophthalmology of the New York Post Graduate Medical School. As chairman of the Committee on Medical Social Service in Eye Clinics of the National Society, he has put much thought on the subject on which he writes editorially.

The major interest of **Mrs. Winifred Hathaway**, associate director of the National Society, almost from the beginning of her work with it fifteen years ago, has been sight-saving classes. She is the representative of the National Society who promotes the development of sight-saving classes as well as training teachers for this work.

---

Among the Book Reviewers: **Dr. G. T. Buswell** is professor of educational psychology at the University of Chicago; **Miss Francia Baird** is supervisor of prevention of blindness work of the Missouri Commission for the Blind; **Miss Margaret Phelps** is an assistant to **Dr. Thomas D. Wood**, professor of physical education, Teachers College, Columbia University, with whom she collaborated in this issue's book review; **Dr. Colman W. Cutler** was introduced in the past number of the SIGHT-SAVING REVIEW as member of the Board of Directors of the National Society and a practicing ophthalmologist; **Mr. S. C. Swift**, chief librarian of the Canadian National Library for the Blind, is himself of the "world of the blind."

# The Cinema and the Eye

Park Lewis, M.D.

**V**IEWING motion pictures entails less eyestrain than reading a book for a corresponding length of time, says Dr. Lewis—provided that one's eyes function normally, that the film is not worn too much, and that the projection and illumination are good. The position of the spectator in relation to the screen is also important.

## How the Eye Sees

**I**N ORDER that we may the better understand the effect of the cinema on our eyes we must know something of the way in which outside impressions affect our consciousness. We are in fact seeing moving pictures from the time that our eyes are opened in the morning until they are closed at night. Either we are moving ourselves or somewhere within the range of our field of vision there is constant movement. It may be the flickering sunshine, the tremulousness of the leaves in the trees, the passing of flying birds, the fluttering of the garments of those who are near us, the vehicles in the roadway or any other of the constantly changing impressions that indirectly meet our eyes. These are of such continued occurrence that we grow to ignore them. They nevertheless stimulate the retinal elements and we become at once aware of them as soon as we are conscious of their presence. The impressions of the objects that we regard as stationary are not as free from motion as they appear to be.

Now in fact we are never absolutely still. Our eyes are continuously adjusting themselves to the changes in position which we ourselves assume so that if we are looking at a fixed object the image which it makes on our retinae can be fixed only if we are as still as the object of our attention. The head will move forward or

backward, the body will sway to some degree even though we may be wholly unconscious of any motion. Moreover, any fixity of gaze for more than a very short time is fatiguing so we almost automatically and unconsciously look from one detail to another. Nor do the eyes move from point to point with a continuous motion. In reading, the eyes follow the lines in a series of jerks, the interval between these allowing the image to be received on the nerve endings and recorded before the next rapid motion is made. In stereoscopic vision when both eyes are working together to produce a single impression all of the external motor muscles that control the action of the eyeballs are brought into play. When the object on which the gaze is fixed is itself in motion the interplay of co-ordinate action is almost inconceivably rapid.

Consider for a moment the muscular activities that are necessary to maintain the harmonious, balanced action of the eye muscles in the driving of a golf ball or, to a still greater degree, in a great baseball batter like Babe Ruth who fixing his attention on the pitcher, must anticipate the kind of a ball which will be thrown. The interval that elapses between the time that the ball leaves the pitcher's hand and its arrival over the home plate is measured in fractions of a second, the ball being propelled with the velocity almost of an arrow, before it can be struck. In that almost incalculably short period, he must so direct all of his muscles including those of his eye as to enable him to strike the ball at the chosen distance from the end of the club to give it its driving force, to strike it with the center of the curved surface and not with an edge and to determine the exact direction in which he wishes it to go. This combination of muscular actions becomes in time automatic but they are all unconsciously controlled by the definite even though subconscious impressions that that flying ball is making on the player's retina.

### **Moving Pictures without the Screen**

The moving pictures that meet the eye as we walk along the street differ in several respects from those that are usually shown in the cinema. Often we and the objects that we pass are both in motion. Indeed, as we have shown, in some measure this is always so. If, however, the objects are at some distance from our eyes,

the angle which they form on our retinae is a long one. The longer this angle is, the slower the sense of motion seems to be. This is more easily appreciated if we are looking from a rapidly moving train. By holding in view several objects which are at varying distances, such as a fence by the roadside, a bunch of shrubbery a hundred yards away and an elm tree half a mile off, the motion from us will seem to be in inverse ratio to the distance; the fence rails will seem to be rushing by with such speed that the individual details will be indistinguishable and the impression will be confused and unstable. The fence itself will seem to be in rapid motion and flying past us. The shrubbery will also appear to be moving by us but more slowly. The tree in the distance will seem to be still, till we look beyond it to the distant mountain top, and then it will appear to be slowly moving past us.

The sense of motion is emphasized by the relationship of one object to another that appears to be moving faster because of our nearness to it. An illusion is often produced of an object that seems to be in motion when it is we ourselves that are moving and the object is still, or the reverse in which we appear to be still when it is we that are moving and the object itself is quiet. This is most evident in the starting of a railway train on the track next to the one in which we are waiting or from a ship's deck as we are leaving the pier. We may feel quite convinced that it is our train that is in motion although it has not yet started, or that it is the pier that is moving instead of the boat. A far distant object such as the moon or a star may be speeding across the heavens with almost inconceivable rapidity and yet seem absolutely stationary until we watch it for a few minutes in relation to a flying cloud or another star.

All of this may seem to be a long introduction to a very simple subject but it is necessary to understand how the eyes act together and in relation to moving objects if we would realize how moving objects may disagreeably or even disastrously affect them. It is even necessary to know a little more about the eye and its construction as well as of its reactions to outside influences. There are two parts in the perceptive elements of our eyes that function somewhat differently. The part concerned with direct vision is almost microscopic in size and is made up of minute terminal filaments something like cones. With these we get the details of

the objects at which we look. It is this minute area that we use in reading or in getting the clearly defined outline of a distant object. If this is destroyed all accuracy of sight is lost. It does not function continuously. It perceives quickly but the impression fades with equal rapidity so that we actually see in a series of rapid flashes with intervals of about one-tenth of a second. The surrounding field of vision, that which perceives objects at which we are not directly looking, but which are at one or the other side of us, is quite as important in another way. It is this part of the eye that warns us of the approach of a coming automobile. It prevents us from colliding with passersby in the street. It has the quality of recognizing brightness and moving forms to a higher degree than can the visual center. This may be easily demonstrated by looking directly at a star of lower magnitude. If the eyes be then directed a little to one side or the other of it, its brilliancy will be immediately increased. This area is made up of a preponderance of longer and slimmer nerve terminals which are called rods. Many birds have almost exclusive rod terminals which enable them to avoid each other in their rapid flights. A person standing in the twilight will hardly be seen until he moves; then at once this part of the eye is conscious of his presence.

### **Important Elements in a Moving Picture**

The importance of these physiological facts will be apparent when we realize that in looking at the screen we are watching the blending of a series of enlarged pictures illuminated by transmitted light projected from a distance.

There are, therefore, four elements to be considered in an inquiry as to whether the pictures shown in this way can in any degree be injurious to the eyes of the observer. These have to do with the quality of the film, with the arrangement of the lighting and the mechanism of the motion, and with the position of the observer. The final and important requirement is that his own eyes shall function normally.

The first requisite is that the screen picture shall be clear and distinct. The captions and other descriptive matter accompanying the view should be sufficiently large to be easily read and not so redundant that the reading may not be easily completed before it disappears. That the film may be clearly shown depends on sev-

eral elements. The first is the illumination. This should be adequate but not glaring. A glare is an excess of unfocused light; a sharp unshielded bundle of light rays coming from one side or the other or reflected from the screen itself, or from an unshaded light bulb in the dimness of the playhouse, will cause unnecessary discomfort.

The arrangement of the scene itself so that glaring reflections are thrown back on the audience is now of infrequent occurrence as the good producers are employing the assistance of the best artistic and illuminating engineering talent. It is better that the hall in which the picture is shown be not too dark. Strong contrasts of light and darkness are not pleasant and the details of the picture are brought out with even greater clearness in a twilight atmosphere if there are no distracting light sources visible. It is imperative that the film be run through with just the right degree of rapidity to make the images stand out and to move with the deliberation of actual living people. The beauty as well as the eye comfort of what might otherwise be an exquisite picture is often ruined by the rapidity with which it is shown. In the exhibition of an instructive picture recently shown in an educational institution of high standing a current of twenty-five instead of sixty cycles was used. This together with some fault in the motor mechanism caused a constant flickering of the light that gave the impression of a picture seen through falling water. The sensation produced was most uncomfortable and soon became fatiguing. The whole effect of the picture was thereby lost and the illusion destroyed.

It is also important that films be retired from service after a reasonable amount of use. When they become spotted and cracked either from the heat of the lamp or from too long continued use, they give blurred and indistinct impressions and are neither attractive nor comfortable to look upon. In some of the cheaper picture houses they are used much too long.

The position which the observer occupies in relation to the screen contributes very much to the eye comfort. If he is too close to the screen the pictures become blurred and confused, and defects are emphasized. The same effect is produced if the picture is viewed from too great an angle from one side or the other. Sometimes these nearer inferior seats are cheaper and are occupied by children whose eyes are more easily harmed by the resulting strain than

would be the eyes of older people. Children should not be allowed to occupy these less desirable positions. The best place from which the picture can be viewed is near the center of the hall and directly in front of the screen.

### **Good Sight Needed to See Moving Pictures**

The final requirement, if the film is to be seen without discomfort, is that the eyes of the observer shall be functionally normal and of good visual acuity. When in the absence of any of the defects above mentioned—in the screen, in the evenness with which it is shown, in the illumination and in the position of the observer—there is still a consciousness of strain which is not occasional but persistent, it is safe to assume that there is present some ocular defect that should be corrected. It may be focal or muscular but it will be found that any other continuous use of the eyes will be equally discomforting. In that event the eyes should be examined in order that the defect may be found and corrected and the prescribed glasses worn.

In a recent inquiry which was instituted by Professor De Feo of Italy and presented at the annual session of the League of Nations, opinions were secured from leading eye physicians throughout the world, including Professors Van der Hoeve of Holland, Ovio of Italy, de Lapersonne of France, de Grósz of Hungary, Angelucci of Italy, and others of equal eminence. The agreement was general in the views expressed above. The following conclusions, therefore, seem warranted: that under normal physiological conditions, moving pictures do not cause serious eye fatigue; that since viewing moving pictures is distant vision it does not demand so great an ocular effort as near vision—such as reading for a corresponding length of time; that when eyestrain is caused by moving pictures it is due to one or another preventable condition such as too prolonged fixing of the attention on a single point, or defective visual function, to a bad position of the observer in relation to the screen, to poor films, improper manipulation of the apparatus, to faulty projection or to improper illumination. With these reservations there is no more harm to the eyes in viewing the moving pictures with modern improved methods than there is in any other normal use of the eyes.

# Why Student Nurses Should Be Taught Conservation of Vision \*

Zoe La Forge, R.N.

IN hospitals, schools, and homes, nurses are serving the cause of prevention of blindness daily. As Miss La Forge points out, the nurse's attention to her patient's eyesight with the thought of conserving vision is simply part of the general change in emphasis from care of emergencies to prevention of illness and promotion of good health.

**A**PRESENTATION of the broad outlines of the hospital background of the student nurse in contrast to the field of public health nursing may help us to focus the picture of the need for more and better teaching of conservation of vision in many schools of nursing.

## Public Health Nursing Field

In the field of public health, the nurse is primarily a teacher. Her preparation for the job of teaching has been in the main what she gets in the training school, where the methods and application are that of classroom theory and prompt application of the theory in situations requiring exact execution and where in case of failure to make the appropriate application, there is prompt and often drastic disapproval. The situations may include many in which failure is the determining factor between life and death; very few are in relation to persons in normal or apparently normal health. They are charged with the elements of drama, grave responsibility resting upon the physician and the nurse for the out-

\* Presented May 7, 1931, at the Round-Table Conference on Conservation of Vision during the Annual Meeting of the National League of Nursing Education, Atlanta, Georgia, and appearing simultaneously in the *American Journal of Nursing*, September, 1931.

come, both for the well-being of the patient and for the professional future of the nurse. Swiftmess of action and accuracy of judgment are required in the rapidly changing scenes in the hospital. No better method for rapidity of learning has been devised in any educational system than the hospital setting just described.

In general, the student nurse, or any other nurse in the hospital, and the physician find the convalescent or the mildly ill patient uninteresting in comparison with the patient requiring the maximum of effort and medical skill. In convalescence the element of drama is removed and humdrum routine is restored. This may be the explanation of the preference on the part of most young graduates for surgery, the most swiftly moving service in the hospital.

The public health nursing field is in sharp contrast to the daily hospital situations of rapid turnover of patients, with a succession of seriously ill patients for whom life or death may be determined by the skillful ministrations of the doctor and the nurse. In public health nursing the possibility of continuous skilled nursing care is non-existent. Between her visits a substitute for the nurse must be found in some member of the patient's family or among her neighbors; the substitute must be taught to perform the necessary nursing procedures until the nurse comes again. And still further substitution in all probability must be done; for most of the convenient appliances of the hospital an improvisation will be made, usually from the fertile brain of the nurse. The physician's orders may be simple, brief and lucid even to a child's understanding, and yet there may be no certainty that they will be executed by the substitute as they are intended.

### **Conservation of Vision in Public Health**

The problem of the conservation of vision is met at numerous points in the field of public health. The earliest activities of the public health or visiting nurse were those of communicable disease, school nursing, infant and maternity care, with industrial nursing following a short time later. The changing emphasis in public health from the care of emergencies to a program of prevention of illness and promotion of health throughout the range of human experience by means of educational measures still entails the necessity for consideration of measures for the care of the eyes and

conservation of vision. In certain communicable diseases, notably tuberculosis, syphilis and gonorrhea, and in certain general diseases, as nephritis and the nutritional deficiency diseases, the complicating eye involvement requires prompt recognition and treatment if the vision is to remain unimpaired or to be even partially preserved. These conditions may be found in varying degrees of severity at any age. They may be the most conspicuous element in the picture or they may be so obscure as to be a matter of doubt even to a trained and critical observer.

### **Where the Public Health Nurse Helps**

Several services now commonly included in the program of public and private agencies concerned with health, presenting problems of vision conservation will be briefly discussed. The maternity service of most health agencies includes prenatal and postpartum service and care of the newborn; delivery service is provided in very few. The significance of the positive Wassermann or Kahn test in the expectant mother should receive considerable emphasis with the student nurse. The prevention of congenital syphilis by early and intensive treatment of the mother plays a large part in the program for conservation of vision. A nurse aware of her opportunities for preventive work may reach beyond the walls of her hospital. Recently we received inquiry from such a nurse regarding possibilities for treatment for the family of a congenitally syphilitic little boy with a keratitis which had progressed so far that some impairment of vision was inevitable. The mother was again in early pregnancy and the nurse realized an opportunity for teaching and prevention. She made arrangements in a far distant county for continued treatment when the mother returned to her home. Unfortunately the student nurse has slight opportunity to observe patients during pregnancy and still less experience in teaching them.

### **Care of Eyes of Newborn Babies**

The care of the eyes of the newborn includes the instillation of a solution of silver nitrate or other prophylactic for the prevention of ophthalmia neonatorum, a legal requirement in the majority of states at the present time. The incompleteness of reporting of this

and all other reportable communicable diseases is a perennial problem of departments of health. Dr. B. Franklin Royer, in his recent paper on "Syphilis and Gonorrhea as Causes of Blindness,"\* says, "In 1907, just twenty-three years ago, 28.2 per cent of the admissions (to schools for education of the blind) were reported blind from birth infections of the eyes, while for the last completed year 9.3 per cent have been reported blind from this cause. The decline has been so steady and consistent, even when midwife procedure has been far from perfect, that the value of prophylaxis of the eyes of the newborn as a protective measure cannot be doubted."

In the city of Birmingham, Alabama, the incidence of ophthalmia neonatorum based on reported cases per thousand live births was .376 in 1921 as compared with .115 in 1930. Midwifery has been frequently charged with responsibility for the incidence of this disease; no licenses to practice midwifery have been issued in the city of Birmingham since 1921. In 1930, only 14 of the 5,199 live births were attended by some person other than a physician.

Contrasting the care of an ophthalmia case in the hospital with that given in the home under a public health nursing service brings out sharply the essential differences in the two services, in which the nursing techniques are identical. The hospital nurse is made responsible for the faithful and consistent carrying out of the treatment prescribed by the physician. The home nursing requires the teaching of some member of the family or neighbor the technique of the care of the infected eye, and effectually impressing the imperative need of frequent cleansing. Both are clearly nursing plus teaching. If either fail to be performed effectively, vision may fail forever for the newborn babe. The possibility of the calamitous outcome is undoubtedly an important factor in the methods used by the public health nurse with her unskilled pupil. The nurse's earnestness carries weight and the importance of responsibility is felt more or less deeply by the temporarily appointed assistant, although she may be illiterate and even profoundly ignorant. Practical necessity has compelled attempts to teach midwives the performance of aseptic services for the maternity cases under their

\* Syphilis and Gonorrhea as Causes of Blindness," B. Franklin Royer, M.D., *Journal of Social Hygiene*, March, 1931.

care and the instillation of silver solution in the eyes of the newborn as a prophylactic measure. The latter procedure appears to have been effective to a certain degree although the reasons for the technique may be still nebulous to the midwives. We recall the amazing response of the midwife as to whether she knew why the direction of the eye swab should be away from the nose rather than toward it. "Yes, miss," she answered, "so the baby won't get cross-eyed!"

### **The Eyes of School Children**

The service for the school child is perhaps less concerned with nursing procedures than for either the prenatal patient or the newborn infant, since situations requiring their use occur relatively less frequently. The nurse in this instance is dealing with apparently well children, with probably little or no preparation for her job. Few if any training schools for nurses have available for teaching and demonstration purposes a nursery with children of varying ages. If the nurse knows the normal behavior of little children and knows how to handle them successfully, she has probably learned it elsewhere than in the training school.

The development of a special method and of the successful program for testing vision of very young children is a conspicuous contribution within recent years of the National Society for the Prevention of Blindness. The skill required is of a very high order, the time and patience necessary are almost without limit. With the usual routine of the traditional school health examinations it is doubtful if many of the youngest children in school can have the benefit of this service, even after such careful demonstrations as have been made available. It is becoming a common practice in many communities for the teachers to test the vision of children of their grades. The Bureau of Education in the Department of the Interior of the United States, in its bulletin, "What Every Teacher Should Know about the Physical Condition of Her Pupils," prepared by Dr. James Frederick Rogers, gives detailed instruction to teachers on the technique of vision testing, and includes as an insert a part of the Snellen chart with instruction for its mounting and placing in the schoolroom. Special emphasis is laid upon the importance of observation of the behavior of the

child with respect to use of the eyes, or his complaints of feeling ill and the possible significance of these symptoms in relation to eye defects or disturbance of vision.

### **Training Teachers for Eye Inspection**

The program of health education in Jefferson County, Alabama, differs from the traditional school nursing program in this respect: its staff is composed of teachers instead of nurses who supervise and train in service the teachers of the rural elementary grades in the teaching of health. The subject matter has been supplied these teachers through extension courses, reading courses, bulletins and a manual of health education prepared by the director of the service, and the visits of the four supervisors. They are taught to recognize and to make use of school situations for practical application of health lessons, or conversely, a discussion is developed regarding the health lesson in a school situation.

The teacher under this program is encouraged to observe her children for deviations from the normal or usual behavior with respect to the use of the eyes continuously throughout the school year. Her observations are recorded on a chart or case record provided for this specific purpose. These are available for the information of the nurse who does the follow-up home visiting. They also afford a basis for discussion between nurse and teacher regarding the children thought to be in need of special help, the plans for the follow-up and, even more important, it is the nurse's opportunity to confirm the observations of the teacher, to correct them when necessary, to guide her in what to look for in further observations, and to encourage her in her new experience; in reality, to teach her in this very practical way through the study of case records and direct observation of the children under her care.

The use of the Snellen chart is not generally taught to the teachers in the Jefferson County system because of the practical difficulties of adequate supervision for a procedure requiring such exact technique. Accurate checking of the recorded findings would be almost impossible. The teacher's observation of the child's habitual use of the eyes, her report of the child's complaint of headache or pain, or the presence of redness or discharge, the

presence of squint, or of any other condition which may be considered a variation from the usual or the normal have been found during the past five years' experience to comprise a thoroughly practical program.

### **The Crossed Eyed Child**

One other service,—the last to be discussed in this paper,—which the public health nurse renders and may overlook if she lacks a prime motive or sound preparation is that in behalf of children of preschool age afflicted with strabismus. When the mother of such a child saves her egg money to pay jitney fare, walks a considerable distance to catch the jitney when it passes on its regular schedule, waits patiently if it is off schedule and late, and when she and the child are disgorged from its torrid interior at the bus terminal, in spite of her real terror at the noise, confusion and strangeness of the big city, she locates the dispensary, gets a sandwich for the child and a drink for herself at the small stand nearby, then patiently sits while the child wails with fatigue until the clinic is open, and she tells the attendant that the nurse told her she must see the doctor about the child's eyes, it is clear evidence of some very effective teaching on the part of the field nurse. The cases of strabismus in children under six years of age receiving proper examination and treatment constitute only a small percentage of those needing it, although the most casual observation may disclose the need. Powerful motivation is necessary to overcome the chronic inertia usually associated with this pathetic condition, if treatment is to be initiated sufficiently early to prevent permanent impairment of vision.

### **Conclusion**

The several services outlined above are only a few of the points of contact of conservation of vision in the field of public health; they serve to illustrate the reasons for teaching student nurses (1) conservation of vision, and (2) how to teach. What shall be taught and how it shall be taught, the content and the method, are matters to be determined by the training schools. In the very nature of the case, no training school can completely prepare the student nurse for her future professional experience. But is it too

much to ask that her education while in training shall be so fundamental in character and so concrete in clinical experience with both normal and abnormal conditions that she shall possess skill and appreciation in such degree to be acutely aware of the unexplored fields awaiting investigation and experience outside the hospital, and that she shall feel her professional education is a process of continuous growth?

# The National Society for the Prevention of Blindness

Lewis H. Carris

**T**HIS summing up, by its managing director, of the Society's aims, policies, and activities indicates the wide ramifications that are necessary to an effective program for preserving the nation's eyesight.

## Organization

**T**HE National Society was organized as the National Committee for the Prevention of Blindness on January 1, 1915, for the purpose of meeting a need felt by workers in the field of conservation of vision for some central agency to furnish information and assistance in carrying forward their work. It enrolls as active members and supporters physicians and laymen, men and women interested in public welfare, especially in public health movements, not only officials whose duty it is to take measures to conserve health, but also public-spirited humanitarians to whom the crime of letting children go blind who might be saved from blindness or impaired vision is an offence which calls for action looking to its prevention; in whom pity for the condition of sightlessness cries out for means to avoid it whenever possible. Half of all blindness is preventable; hence there is a field of activity for this Society in helping to create, by agitation and education, a condition of watchfulness and care that this great calamity to individuals and to society shall not fall upon them needlessly.

## Objects for Which the Society Works

All of the activities of the Society are based upon Article I, Section 2, of the by-laws, as follows:

"The objects of the Society are:

1. To endeavor to ascertain, through study and investigation, any causes, whether direct or indirect, which may result in blindness or impaired vision.
2. To advocate measures which shall lead to the elimination of such causes.
3. To disseminate knowledge concerning all matters pertaining to the care and use of the eyes."

In carrying out these objects co-operative relationships are established with agencies of society, official and volunteer, which have either a direct or an indirect responsibility for the prevention of blindness or conservation of vision.

It is understood that the National Society is a lay organization co-operating actively with the medical profession, particularly ophthalmologists, and with official and volunteer health agencies.

### **Co-operation with State and Local Agencies**

The National Society has at all times extended fullest co-operation to local societies where they exist and has actively assisted in the organization of such local or state societies wherever the movements for such organization arise locally and give some promise of success. To date, it has not been the policy of the Society to set up state organizations which would be dependent upon the National Society either for their charters or for financial support, nor has there been any obligation on the part of state societies to furnish financial support to the National Society.

The Society has had before it continuously the question of policy as to the multiplication of local prevention of blindness units. There are arguments both for and against aggressive promotion of new agencies. So far the preponderance of argument appears to be in favor of a non-aggressive policy in this respect. Perhaps the determining factor is that activities for the prevention of blindness in a state do not always depend upon the existence of a local volunteer agency. On the contrary, our experience has shown that there are a considerable number of states lacking this type of organization which have progressed so far that there is at present probably no need for an additional volunteer agency concerned primarily with the prevention of blindness. This is true because the nature

of the Society's individual programs is such that responsibility for them can profitably be passed on to some existing state official or semi-official organization having authority to secure action. Some examples of this are the activities of health departments in the reduction of ophthalmia neonatorum and the vision testing in the schools under the direction of school or health officials. A weak local organization may be worse than none since it may effectively obstruct the work of other agencies in its territory and do little or nothing itself.

### **Co-operation with Ophthalmologists**

Whatever progress the Society has made in popularizing sound ophthalmological teachings has been due to the continual interest on the part of ophthalmologists themselves in the work of the Society. From communications, personal contacts in the field, and ophthalmological meetings attended by staff members, it is evident that ophthalmologists are gaining increased knowledge of the Society's work and are regarding it with approval. Among the co-operative activities in this field have been:

1. Preparation and distribution of literature of particular interest to ophthalmologists;
2. Provision of the Society's stereopticon slides and moving picture films for use by ophthalmologists in their lecture and teaching work;
3. Securing approval from ophthalmologists of recommendations and material offered by the Society in its work;
4. Enlisting the co-operation of ophthalmologists in the establishment of sight-saving classes;
5. Calling conferences of representative ophthalmologists;
6. Attending ophthalmological meetings upon invitation;
7. Securing co-operation of ophthalmologists in the promotion of medical social service in eye clinics;
8. Preparation and exhibition of material for national and state medical associations.

### **Co-operation with State and Provincial Health Authorities**

During the latter part of 1925, a co-operative relationship was established with the Conference of State and Provincial Health Authorities of North America through its Standing Committee on

Conservation of Vision. Two representatives of the Society were appointed as consulting members of the Standing Committee, with the Society acting as secretariat. One of the results has been friendly contact with all the state and provincial health officers enabling field representatives of the Society to secure favorable introductions and easy hearings on entering a state. Further, it has enabled the Society's staff to give advice to various states in the drafting of rules, regulations and legislative procedures affecting eye health, and has secured for the Society's representatives a place on each annual program of the major conference of the State and Provincial Health Authorities.

### **Prevention of Blindness in Newborn Babies**

Among the special accomplishments of this joint relationship may be mentioned the twenty-page study on the "Prevention of Blindness in Newborn Babies," based on questions put to all state and provincial health authorities, all professors of obstetrics and all maternity hospitals in the United States and Canada, in 1926. This report was presented before the Forty-first Annual Meeting of the Conference of State and Provincial Health Authorities of North America during the American Health Congress held in Atlantic City in May, 1926, and was printed in the *Proceedings* of that meeting. Reprints of this were sent to each member of the Board and were utilized in propaganda work by the Society until recently, when a similar study undertaken in 1930 (and presented before the Forty-fifth Annual Meeting of the Conference held in Washington, D. C., in June, 1930) was published; reprints of this are now available and will be used for propaganda purposes for some time to come. This study was completed in time to make all the material available to the appropriate committees of the White House Conference on Child Health and Protection.

A current project of considerable importance is the conducting of a research into the pharmaceutical and chemical refinements that may make silver nitrate still more satisfactory as a prophylactic in the eyes of newborn babies. This work will continue for six months.

Another objective of the joint relationship under discussion is to secure renewed research into the etiology, epidemiology and public health control of trachoma.

### **Medical Social Service in Eye Clinics**

Though but recently included as a special project of the Society, activities for the development of medical social service in eye hospitals and clinics may be considered an outgrowth of efforts since the beginning to further co-operative relationship with agencies engaged in social case work. Through representation in the National Conference of Social Work and the National Social Work Council, as well as participation in state and local conferences, the Society has had opportunity to bring the question of prevention of blindness before welfare groups and to encourage a consideration of sight conservation measures in the formulation of their working programs. The present tie-up with the medical-social field may be classified as follows:

1. Since January, 1928, the Society has co-operated on a demonstration basis with the Massachusetts Eye and Ear Infirmary by granting funds for the employment of an additional social service worker assigned to work with glaucoma patients.

2. A co-operative plan with the Massachusetts Eye and Ear Infirmary has been developed whereby selected students are placed for social service training in eye work, on scholarship from the National Society; such students are to be placed at the termination of the training period in strategic positions for developing this pioneer work. While employees of the hospitals in which they are placed are under their direction, a certain amount of supervision of the work done by these students will be retained by the Society.

3. A national Committee of Medical Social Eye Workers was formed in June, 1930, for which the National Society is acting as secretariat in conducting an exchange of information and experiences between medical social workers engaged in eye service through the medium of a bulletin and through correspondence.

4. To meet a demand from hospital social workers in New York City, the Society has contributed this past season in arranging a series of fortnightly study conferences carried under the auspices of the Welfare Council, the North Atlantic Division of the American Association of Hospital Social Workers and the Associated Out-Patient Clinics. A program of eight formal conferences in which twenty-eight ophthalmologists participated preceded a discussion of the social aspects of the particular eye difficulties. The program

has also included interval round-table meetings for the social workers themselves and general meetings for promoting a more widespread interest in the subject.\*

### **Inquiry into Causes of Blindness in the United States**

The Society, in co-operation with the American Foundation for the Blind, has been taking steps toward obtaining better statistics of the blind. During the past two years there has been in existence a special committee consisting of representatives from agencies dealing with the blind and the prevention of blindness, the medical profession, the United States Census Bureau, statisticians, etc. The ultimate aim of this committee is to collect in some central registration office the fundamental statistical data regarding the blind and to keep this information currently up-to-date. As the material will be furnished by a variety of agencies doing work with the blind, it has been necessary to work out in advance definitions, schemes for classification, record forms, etc., in order that the data may be comparable. The work of the committee has reached the stage where it is ready with its tentative plans and outlines. At the biennial conference of the American Association of Workers for the Blind in April, 1931, the secretary of the committee was given an opportunity to present a brief report. This was favorably received and the Association resolved to appoint a special committee from its members to co-operate with the larger committee. It is expected that within a short time these preliminary plans will have been submitted to other interested groups such as ophthalmologists, for criticism and evaluation, after which the committee will proceed with some trial studies.

### **Co-operation with Columbia University in Study of "Eye Load" in Reading**

For some time members of the staff of the Society have been aware of the fact that certain of the practices, methods and materials used in reading are being generally accepted at present simply because their desirability has never been questioned or tested. Great interest was, therefore, manifested when a graduate student

\* Notes of the medical lectures and the discussion are available, and reports of the study group are disseminated with the hope of stimulating efforts in other cities.

at Columbia (who has subsequently become a member of the staff of Teachers College, with particular responsibility in research) called upon the Society for advice in working out a program of research studies on the effect of reading upon eye health. The student has the confidence and co-operation of a group of the professors of the University who represent the ophthalmology, optics, and physics departments as well as the department of education. These men are working closely with the research student in planning and executing the studies.

The preliminary library research to determine what is already available and what use can be made of this information has been completed and plans are under way to start one of the experimental studies.

The Society is giving some financial assistance and is serving in an advisory capacity.

### **Preschool Eye Testing**

The program for teaching the importance of detecting and preventing eye defects in the preschool age group is another for which the Society can justly claim credit both for pioneer effort and spread of the practice. The work began in 1925, when, at the request of the National Society, Dr. H. R. Skeel volunteered to make complete ophthalmological examinations of the children in a kindergarten in New York City. The main purpose at that time was to accumulate a group of case records that would give statistical data for guidance. The examination program was continued by a number of Manhattan and Brooklyn ophthalmologists until by the spring of 1929, nearly 1,000 records were available for study. Meanwhile it was found to be more efficient to have a nurse sort out the children requiring complete examinations by the ophthalmologist, and the nurse employed for this purpose was responsible for the development of an improved technique of testing the vision of little children. This method, being based on sound psychological principles, is so simple that after a little instruction it may be adopted by nurses or others who are accustomed to doing vision testing. At present the major portion of preschool eye work consists of demonstrating this method and other points of technique in checking the vision of the young

child before groups of nurses and teachers throughout the country. Plans are under consideration to check up the extent to which the teaching is being carried over into practice in communities where demonstrations have been given.

### **Eyesight of School Children**

The co-operative activities of the Society with the Joint Committee on Health Problems in Education of the National Education Association and American Medical Association, of which Dr. Thomas D. Wood of Columbia University is chairman, have continued. "Conserving the Sight of School Children," published for this Joint Committee by the National Society, has been in such constant demand that since its last revision in 1929 it has gone through two editions of 2,500 copies each. It is hoped within a reasonably short time that the report may undergo a further revision in the light of the extended experience which the Society has had in better opportunities now available to secure new statistics from which the basic study is set up. Such a revision will be largely the responsibility of the Society in all probability, and will require considerable research.

### **Sight-Saving Classes**

The number of sight-saving classes in the United States shows a steady growth, the number of classes on May 1, 1931, being 375.

The National Society for the Prevention of Blindness serves as a clearing house for information regarding all problems relating to the establishment and conduct of sight-saving classes. This program has been for several years one of the major responsibilities of one member of the staff and has consumed much of the time of others at particular periods. Since the National Society has actually aided in the solution of many problems of method, equipment, personnel, etc., and is constantly in intimate touch with a large proportion of the teachers and supervisors, its advisory service is in great demand. Further, a number of the Society's publications deal with the subject of sight-saving classes. These range all the way from the brief descriptive folders explaining their function and value to detailed instructions on methods of teaching,

equipment, etc. Frequent lectures and talks serve the same purpose.

One of the largest contributions of the Society has been the establishment of training courses for the prospective sight-saving class teacher. Almost all of these have been planned, subsidized to a greater or less extent, and conducted in whole or in part by the staff, at least during the early stages. Incidental to contacts with both the student teacher and the communities in which classes have been established, some assistance is given to school superintendents and teachers in placement of workers.

All sight-saving class activities are undertaken in close co-operation with educational and ophthalmological authorities. While the advantages of these classes to the children enrolled cannot be estimated, there is, in addition, a by-product of even wider import; because of the work of sight-saving classes, more attention than ever before is being given to the eyes of all school children. Teachers of normally sighted children have become vision conscious, better lighting systems prevail throughout school systems, and the eye load is lessened by clearer type in books and other material.

### **White House Conference on Child Health and Protection**

The Society made its contribution to the work of the White House Conference through the service of two members of the staff on three of the sub-committees of the Conference. The subjects dealt with were the care and special class training of the child who is handicapped by defective vision and the prevention of such defects.

In a report of approximately 200 pages concerning sight-saving classes were assembled many facts regarding legislation, financing, standards, etc., which had not previously been available anywhere. While gathered primarily for the use of the White House Conference, the data are extremely valuable to the Society in its own sight-saving class program.

One outgrowth of the Conference has been the introduction into Congress of a bill to improve the welfare of the handicapped. There also are indications, through conferences that are being called, that states and local communities are giving serious consideration to the recommendations of the Conference.

### Eye Accidents

Seeking elimination or reduction of the accident hazards which cause blindness and other serious eye injuries in industry and in public and private life, the Society co-operates with national and local agencies engaged in accident prevention including the National Safety Council, the American Society of Safety Engineers, the American Museum of Safety, the American Federation of Labor, state industrial commissions, central labor councils and local safety councils. These agencies, while providing leadership for the general safety movement, welcome the assistance of this Society in the campaign against the specific group of hazards causing eye injuries.

Among the Society's activities in this direction are: (1) distribution of the book *Eye Hazards in Industrial Occupations* to safety engineers, industrial executives, governmental officials, industrial physicians and others; (2) participation in joint conference and committee work of the aforementioned agencies when conservation of vision is concerned; (3) addresses by staff members to groups professionally concerned with or otherwise definitely interested in elimination of eye hazards; (4) advice to individual inquiries, personal and by correspondence, on methods of protecting the eyes of industrial workers; and (5) publication of information concerning the nature, seriousness and means of eliminating accident hazards.

Illustrative of the latter activity is the publication of *Eyes Saved in Industry*, which was widely abstracted and commented upon in the industrial and lay press. A more recent activity of this type is the formulation of a self-appraisal for executives concerned with eye protection in industry, requests for which have been received from all sections of the country and which is rapidly being looked upon as a program for thorough-going eye protection in industry. There is, however, not only room for but urgent need of wide expansion of this work in industry and on behalf of the reduction of eye accidents outside of industry.

### Publications

The various publications of the Society are designed and, it is believed, are meeting the needs of popular and general eye health

education. The publications may be divided into two groups: (1) those which are used for disseminating prevention of blindness and sight-saving information to the general public through popular presentation, which are on hand for distribution, and (2) those publications which are published in limited numbers to assist in some special project or to meet the needs of some particular group of workers. As the movement for prevention of blindness has grown, there has developed a group of key people among public health workers, welfare workers, industrialists, educators, and safety engineers, who are especially interested in some phase of preventing blindness and saving sight. It is felt that if the key people are served by special pamphlets, a maximum number of the lay public will be reached, since these people act as agents in teaching prevention of blindness and saving sight.

It is to meet the needs of these people, too, that it was felt advisable to create the new publication, *THE SIGHT-SAVING REVIEW*, which contains popular presentations of the various aspects of saving sight. That this is actually meeting the need may be evidenced from the growing list of subscribers.

### **Publicity**

As part of its work of educating the public regarding the chief causes of blindness and vision impairment, the Society maintains continuously an aggressive but discriminating publicity campaign. This is done through the press, radio and other media reaching large audiences. Mere exploitation of the Society's name, however, is avoided. Editorial comments on the possibilities for eliminating the various hazards to sight are obtained through quiet but carefully planned efforts. The Society seeks not only to acquaint the general public with the movement for conservation of vision, but attempts particularly to bring its activities to the attention of special groups, such as physicians, teachers, social workers and industrial executives. The Society has frequent occasion to assist communities with publicity in connection with their local "prevention of blindness weeks."

### **Annual Conferences**

The National Society for the past several years has held annual conferences, some of them extending over a period of three or four

days. Two of these conferences have been held away from New York: the 1927 Conference in Chicago and the 1929 Conference in St. Louis. It is believed that these annual conferences have made a marked contribution to the work of preventing blindness and conserving sight and that they have served to enlist the interest of large numbers of ophthalmologists and educators. The pre- and post-conference activities have enabled the Society to initiate valuable and effective contact with state and local agencies.

### **Territorial Responsibilities**

The Society is constantly being confronted with its responsibilities in Porto Rico, Alaska, Hawaii, the Philippines and the Virgin Islands. Tentative plans are being made for a visit by a representative of the Society to Hawaii early in the coming year. Representatives of the Society visited Porto Rico some nine years ago, with very satisfactory results. During the past winter a member of the Board of Directors spent a month in Porto Rico in the campaign for child health and while there had abundant opportunity to observe conditions and to discuss with Governor Roosevelt ways and means for the conservation of eyesight. Indications are that the need for a practical program for the conservation of vision is greater in the dependencies of the United States than anywhere in the states themselves.

### **International Work**

From the beginning of the work of the Society, numerous requests have been received from various parts of the world for information concerning the activities of the organization. The Society consequently took a leading part in the recent organization of an International Association for Prevention of Blindness, whose headquarters are in Paris and whose present existence is considerably aided by the League of Red Cross Societies. As the result of this new international agency, a greater interest in the prevention of blindness is being manifested throughout the world.

# The Eyes in Nephritis and Diabetes\*

Thomas H. Curtin, M.D.

**B**Y looking into the interior of the eye during a routine ophthalmoscopic examination, the oculist may find a condition which reveals that the patient has Bright's disease. Diabetes, likewise, is sometimes discovered by symptoms disclosed in an examination of the eyes.

## The Retina—Its Functions, Anatomy and Physiology

**I**T IS impossible to say very much in the short time allotted to me on this very large subject which comprises a great many deeper eye conditions that we find. Retinitis is a term which is very general, as are all these "itis" terms—peritonitis and pleuritis, and so on. Retinitis simply means an inflammation of the retina. These terms are rather indefinite and we should really have a better nomenclature than we have today.

The retina, as you all know, is the interior membrane lining the posterior portion of the eye. It is simply an expansion of the optic nerve fibres. The optic nerve penetrates the eye a little to the inner side of the posterior diameter and there expands itself and lines the entire interior of the eye, going forward as far as the ciliary body and ending in the ora serrata.

This retina, I might say, in the living eye is purple-red which bleaches on exposure to intense light. In death also we find the retina becomes white. The coloration of the retina is due to what we call the visual purple. In the direct axis of the eye in the retina is a small spot one or two millimeters in diameter which is called the macula. In the center of this spot is a small depression called the fovea centralis. All distinct vision is made in that small area of the retina.

\* Presented during the series of study meetings on Medical Social Service in Eye Clinics arranged by the Committee on Development of Social Service in Eye Clinics of the Medical Social Service Section of the Welfare Council of New York City.

The other portion of the retina receives impressions but they are not distinct, and is what we call field vision. The vibration from the light striking the retina is transmitted through portions of the retina, mostly the layer called the rods and cones, back through the optic nerves and optic tracts and to the brain, where it is transmitted into a form called light.

Of course, we have other impressions which have to be transmitted to the brain in order to interpret images, so when we say we see in the eye, it is untrue. We do not see in the eye itself. We see the impressions on the retina of the eye which are transmitted back through the optic nerve and optic tract to the vision area and there these vibrations are interpreted into sight. The vision center is located in the posterior portion of the brain in the occipital lobe.

We have cases of blindness, as you all know, where the eyes are absolutely intact. The optic nerves are intact, and sight has been lost from a skull injury or a head injury. During the late war we saw at least three such cases.

The optic disc is seen with an ophthalmoscope as a reddish-white round disk situated to the inner side of the macula. It is where the optic nerve penetrates the eye. There can be seen the blood vessels of the eye, the arteries, the veins.

The retina of the eye is supplied by one blood vessel called the central artery of the retina which penetrates the nerve a few millimeters back before it enters the eyeball. It then goes in through the nerve and on the disc it divides into two portions, an upper and a lower, and then into a right and left, giving off branches like a tree. In this way the retina is nourished, with the exception that we have a few small vessels that come from the ciliary arteries penetrating the eyeball which supply the macular region. However, as a rule, if we get an obstruction or destruction of the central retinal artery we find the person becomes absolutely blind except in a few cases where the ciliary vessels are sufficient to nourish the macular region, and there the individual may have a small amount of sight which will be direct. That would be telescopic, small in area.

The minute anatomy divides the retina into ten layers. The rods and cones are the most important and we find in this macular region of the eye it consists almost entirely of these rods and cones.

### Disturbances of the Retina

Knowing the retina, its function and a little of its anatomy and physiology, we come to affections of the retina, inflammations and circulatory disturbances. You may have a simple inflammation, an edema of the retina, where you simply see a slight amount of haziness of the retina itself and the edges of the disc blurred. This is of no great moment, and is found usually in cases of people who are applying their eyes too assiduously or exposing them to intense light.

If this goes on, we find the inflammation involving the deeper layers of the retina and it becomes a serious condition. Inflammations of the retina are described according to their causation or, as we say, etiology—as albuminuric, diabetic, leukemic, syphilitic, or septic.

I will confine my few remarks this afternoon to inflammation of the retina. I might say that we have a very peculiar condition of retinitis called pigmentary degeneration, so-called night-blindness, where we find the retina starting at the periphery and gradually going toward the center, of black, cinder-like objects, described more like bone corpuscles, as you have seen them under the microscope, and finally coming down toward the optic nerve in the macular region. This is also accompanied by atrophy of the optic nerve, which becomes whiter and whiter as time goes on. It is rather a long drawn out affair, lasting years; the vessels become very small, very fine, and the pigmentary change ends usually in blindness.

The causation of this pigmentary degeneration, or retinitis pigmentosa, the technical name for it, has been absolutely undecided. A great many authorities claim it is a familial affection and is found in people who marry relations. They contend that it is due to consanguinity of blood, mixing of blood of too close types, that is, first cousins, and so on. It is said to be more prevalent in small isolated communities. From my experience this holds true in a great many cases, although we find a great many cases where we cannot trace any consanguinity of blood. However, one usually finds that one or two of the family will be affected. This condition is of slow duration. It goes along, as I said, sometimes for years, but eventually ends in blindness, and to date we have absolutely no means of combating the disease.

### **Albuminuric Retinitis as a Symptom**

Albuminuric retinitis is rather common. Authorities claim it is found in 30 to 40 per cent of cases of nephritis, that is, Bright's disease, usually in the so-called interstitial type, the small kidney. Of course, some of these cases do not show the gross lesions that I will describe later, but they claim in 30 or 40 per cent of nephritic cases, some disturbance in the retina or the circulation of the retinal vessels can be demonstrated.

**Nephritis.**—Discovery of nephritis may be made simply by the ophthalmoscopic examination. A person comes to the oculist to have glasses fitted. In his routine examination the oculist makes an ophthalmoscopic examination, which means he looks into the interior of the eye, and may find certain changes in the eye grounds which, in some cases, make him positive, and in other cases, make him suspicious of nephritis.

I should like to point out to social workers in clinics the importance of having eyes examined by an oculist or at some eye clinic, some special hospital or some clinic attached to one of the big hospitals, because in an examination of the eye it is absolutely necessary that the ophthalmoscopic examination be made. In fact, we are talking to the general doctors and internists about the value of proper eye examinations, because numerous diseases can be determined through this examination, and the interpretation of the findings by a competent oculist. I want to accentuate the fact that for proper eye examination the patients should be referred to the oculist, whether he be in his private office or whether he be attached to one of the various hospitals or clinics, of which we certainly have enough today.

**Retinitis in Pregnancy.**—We may find blindness coming on during pregnancy, usually in the later months of pregnancy. That is also called albuminuric retinitis. These cases show practically the same picture that an albuminuric retinitis will show. You will find the retina will show large white splashes, particularly around the macular region where it forms into a star with flame hemorrhages going off from the vessels.

In albuminuric retinitis the prognosis as to life is usually of short duration. You can usually predict with the lesions of an albuminuric retinitis that the patient will die within two years; but in

the albuminuric retinitis of pregnancy, this is not true, because the condition usually clears up after delivery. Of course, the danger before delivery is of eclampsia.

We also find the same condition as in childbirth, in cases of scarlet fever which is complicated with nephritis. It usually clears up after the patient recovers from the scarlet fever.

There is another condition resulting in blindness where the eye grounds disclose nothing except probably congestion of the vessels or redness of the disc. That is caused by uremic poison, and these patients, of course, show a more general sick condition—vomiting, and sometimes delirium, going into coma. In the examination of the eye grounds they show nothing abnormal because it is a toxic amblyopia, an involvement of the brain itself from the uremic poison.

### Diabetic Retinitis

Next we come to diabetic retinitis. It is usually one of the late manifestations of diabetes and, like nephritic retinitis, is usually found in both eyes. It is not as common as albuminuric retinitis and is ascertained in looking into the eye grounds, not by the form of the exudation in the macular region and flame hemorrhages, as we find in the nephritic retinitis, but usually by more hemorrhage, more flat and round exudations located around the macular region, but which may involve the entire eye grounds.

We used to look upon (I used to, at least) diabetic retinitis with the same grave prognosis that we looked upon nephritic or albuminuric retinitis—that death will come within one or two years. But since the use of insulin, I am very glad to say I have seen a great many cases now living for five or six years, and the eye ground condition has certainly improved.

I might mention here, incidentally, the first symptom of diabetes may be the fact that people require a change of glasses. They usually become myopic due to the amount of sugar that is in the blood. That is something for a social worker to look out for in patients requiring frequent changes of glasses—the suspicion that they may have diabetes.

You can see from this talk on retinitis, just taking up the albuminuric and diabetic, that diseases of the eye for the most

part are simply local manifestations of some general systemic disease, such as nephritis or diabetes or of some focal infection, as bad teeth, tonsils and sinuses. The oculist must not only know the eye condition, but he must also know the general condition of the body which may be the causation of these various inflammations. It cannot be too greatly emphasized that social workers should see that their patients, the people in whom they are interested, have their eyes examined properly by the oculist.

### **Social Service in Relation to Nephritis and Diabetes**

In treatment of conditions like nephritis and diabetes, we oculists realize that we are not specialists in internal medicine, although we have a good general understanding of these conditions and how they should be treated. In our hospital, the Bronx Eye and Ear, we have a close association with a general hospital. We have a connection with Lincoln Hospital, and one pathologist of our hospital happens to be one of the visiting medical men of Lincoln Hospital. We refer our cases to the medical department of Lincoln Hospital through our social service.

When we refer cases to the social service, we expect a special book to be kept of the social service cases requiring special treatment. The doctors in the clinic and hospital are too busy to follow up these cases and it is necessary to have somebody to follow them up, to find out what is being done in the general hospital for the cases.

I might mention that some of these diabetic cases are referred to special diabetic clinics which we have today in many hospitals. But in most cases, patients do not return again to the eye clinic, so that it is the duty of the social service worker to see that these cases are followed up and that they do return to us now and again for further examination. This is a real necessity, not only for the patient's good, but for our own interest, in order that we can see what influence our treatment has on these various diseases. As you know, most of the treatment consists of diet, proper living, and proper medication. The doctor can give the medication and give the instructions regarding the diet and proper living, but we must have some one to check up those conditions and that is the social worker.

**Summary of Discussion**

That each patient whose eye difficulty is caused by a diabetic condition should be kept under close surveillance by the social worker in order that there be no lapse in the insulin treatments was stressed, as was the fact that in a number of cases, operable complications such as cataract should be cared for and the patient's co-operation secured. The reported increase of diabetes in New York City indicates a vast opportunity for social service in this field alone. With retinal disease, frequently the sole symptom noted by the patient is an apparent need for change of glasses. He therefore comes to the eye clinic which must, in turn, refer him for general medical care wherein lies the opportunity for improvement.

# Lighting the Home for Health and Happiness

Winifred Hathaway

**I**N clear and practical fashion, Mrs. Hathaway explains what the housewife and her husband should do, in this age of "psychological influences," to avoid the strain on eyes and disposition which comes from faulty illumination.

**H**EALTH and happiness are affected by minor irritations in larger measure than is usually realized. The wrong slant of light on the work, reflections from a glass-covered desk, or the difficulty of shaving where the reflection and not the face is lighted, may lead to unsuspected difficulties.

The eye is a long-suffering organ of the body. It will often stand, apparently without complaint, more abuse perhaps than any other part, but that does not mean it is not registering its unhappiness. Any one of a number of ills, having no apparent connection with the eyes, may be the result. Nausea, headaches, indigestion, malnutrition, and nervous disorders may have their origin in, or be contributed to, eyestrain.

Naturally, the best type of light is sunlight—free open sunlight that brings health-giving rays to the body. This means open windows in the home, for these rays do not pass through ordinary window glass. In many homes, however, the ideal natural lighting cannot be obtained. The problems of artificial lighting can be more easily solved.

## General Home Lighting

Several factors must be taken into account in any consideration of illumination. The light must be adapted to the type of work or recreation for which it is needed; there must be an adequate amount of light; glare must be eliminated; the type of lighting

should be in harmony with its surroundings; and the illumination should be well distributed.

For those who are fortunate enough to live in a house, outside lighting should be given careful consideration. What is more welcoming than a pleasant glow of light! Lanterns on either side of the door will not only welcome the homecomer and the guest, but will help to prevent accidents. If there cannot be two lanterns, one hung above the center of the door will help greatly. In any event the unit should be so placed that if there are steps they will be well lighted. Dust collects quickly on outdoor lighting units; hence special care must be taken to select closed luminaires so that dust and insects may not accumulate on the inside of the globe and interfere with obtaining desired results.

It is a good plan in the wiring of the new house to arrange for outlets on the piazza so that on occasions for special celebrations outdoor illumination may be easily obtained by plugging in a row of small Christmas bulbs. If we are to bear in mind health and happiness, there must be the same welcome in the hall as on the outside of the house.

There have been many discussions as to whether overhead lighting is fashionable. It is probably not necessary in any part of the house to have brilliant overhead illumination. However, there are times when general lighting is needed in almost every location. It facilitates good diffusion, so that the eye will not be unnecessarily fatigued by spots of light against dark backgrounds. The inner frost lamps now on the market do not collect dust as did the old type lamps, yet they cut off only a very small percentage of the light. It was never intended, however, that these should be used without shades. Hence, if overhead lighting is used in the hallway and other locations in the home, the lamps should be properly shaded in harmony with the surroundings. If there is a coat closet in the hall, it will certainly diminish minor irritations if this is lighted with an overhead unit. This may save many missteps and possible accidents, and will surely do away with the irritation of searching in a dark closet for the required article. In the hallway, torch lamps on either side of the hall table give a very pleasant reaction. Switches should be so arranged that the light on the porch can be turned on from the hallway, and also the upper hall-

way illuminated from the lower. There should be corresponding switches in the upper hallway so that the lower light may be turned on or off from above.

### **The Kitchen**

The kitchen is probably the most used room in the house and is usually by far the worst lighted. An unfrosted bulb suspended from a cord causes glare and shadows, two of the most undesirable qualities of bad lighting. The ideal illumination for this room is a totally enclosing ceiling fixture of translucent glass. The size of the lamp within will depend somewhat upon the size of the kitchen. A large enough lamp must be used to light every part of the room, and the size of the globe must be determined by the wattage of the lamp. In addition to the overhead lighting it is a very great convenience to have side lights at the sink and a light over the stove. These will make for more comfort to the worker, less breakage of dishes, and less burned food. If there is a breakfast nook, this, too, should be lighted for comfort. A totally enclosing globe or a hanging open bowl may be used. If the latter, it should be hung at a distance of 26 inches from the table. If hung lower it interferes with seeing the person on the opposite side of the table; if higher, there is apt to be a glare. Naturally, in wiring the house, convenient outlets will be put in the kitchen in order to attach the electric iron and other useful appurtenances.

### **The Dining Room**

If the dining-room serves no other purpose than for the customary meals, a lower wattage will suffice than if it is used for other activities. Again, overhead lighting may be needed for certain functions; for instance, where the table is considerably enlarged to greet a large company of guests. Here again, as in the breakfast nook, the open translucent globe appeals to many people, but the same care must be taken in hanging. Side brackets are always attractive, but it must be remembered that these are more for ornament than for their light-giving qualities. They must, of course, be properly shaded in harmony with the room. A very beautiful arrangement of dining-room lighting is obtained by hidden lights placed in a recess running round the room near the

ceiling. This, however, is only for those who can afford a real luxury, for both installation and upkeep are exceedingly expensive. Naturally, outlets for the coffee percolator, waffle iron and toaster will add greatly to the family comfort and happiness.

### The Living Room

How many people have trumped their partners' ace at the bridge game while attempting to play under the strain of inadequate lighting! The bridge lamp is exceedingly useful in the living-room, but only those at whose elbow it is placed can see well enough by its light to enjoy their game. The old-fashioned parlor is no longer in existence. It has changed into a real living-room. Hence the comfort of all must be considered. Overhead lighting may seldom be needed, yet the bridge party and the reception sometimes require it. It is well, therefore, to have a center unit for an ordinary size room, or two units for a room too long or too wide to be adequately lighted by one. The table lamp is a great convenience in the living-room, and there should be a sufficient number of floor lamps to enable each member of the family to read, study, or carry on other occupations comfortably. This presupposes plenty of floor or wall outlets. The placement of these lamps is an important matter. They should be so arranged that the light comes from the left rear in the case of a right-handed person, and from the right rear in the case of a left-handed person. The shades of these lamps will of course be chosen in harmony with the color scheme of the room. Two points must be taken into consideration: their appearance during the day and their appearance when lighted. Red lampshades are being little used, since red is a very exciting color. Blue is avoided because of its depressing effect, but if either of these colors is desired, compromises may be made. Thus, the red may become a rose that will blend with other decorations, yet have no unpleasing effect upon the eyes or the personality. Blue shades may be used if lined with rose or gold, thus neutralizing the depressing effect. Many housewives find tones of yellow exceedingly suitable for the living-room. For decoration there may be sidelights, as in the dining-room. To procure an exceedingly pleasant effect, balls of light of very low wattage will be found of interest, especially when they are upheld by an artistic figure in

bronze or copper. The French people excel in this form of lighting. It is not expected to be used for illumination, but merely to add a pleasing spot of colored light. The housewife, however economical, does not like to turn off all the lights in the living-room, even when it is not in use. One of these exquisite decorative pieces, placed over the fireplace, will produce sufficient light to give a pleasing glow, yet will consume little power. Our French neighbors have also gone one step further by making a small depression in the globe and placing therein a few drops of perfume.

### **The Bedroom**

Overhead lighting is also advisable in the bedroom. This, too, may be of low wattage, since it is well to have other parts of the room illuminated for special purposes. We sometimes wonder why people appear with blotches of powder on the face, or rouge inartistically applied. Very often it is because the mirror is inadequately lighted or the units so arranged that the light is thrown on the reflection in the mirror and not on the face. The difficulty may arise from the fact that there is a light unit on but one side of the mirror, so that the opposite side of the face is in shadow. Lighting units on both sides of the mirror will obviate this difficulty. A floor or table lamp placed in such relation to the comfortable chaise-longue that reading or sewing may be done with ease will be a great addition to bedroom illumination. There are now on the market very delightful bed lamps. Some of these are so arranged that they may be moved readily from one position to another. However, the person who finds delight in reading himself to sleep should bear in mind the physician's warning that bed is a place for sleeping rather than for reading. Even though the lighting be ideal, reading in bed is an exceedingly bad habit, unless one sits in an upright position, since only in this posture can a correct muscle balance of the eyes be maintained.

### **The Bathroom**

In the bathroom the general principles of good lighting must be borne in mind. An overhead light is excellent, especially if but one light can be afforded. It is well, however, as in the bedroom, to

have both sides of the mirror illuminated in such a way as to throw the light on the face. Many a man has had his whole day's program disrupted by the irritations of shaving under inadequate light. It must be remembered that it is the face and not the reflection in the mirror that is to be shaved.

For children's rooms there are all sorts of pleasing arrangements of light. If floor lamps are used, it must be remembered that the little folks need shorter stands so that the light may be thrown on what they are doing. If these rooms, however, are used as play places, floor lamps are not advisable. A pleasing unit of overhead light and wall brackets will give the desired results.

### **The Cellar and Laundry**

In the household the illumination of the cellar and laundry will not be forgotten. It is impossible to tell how many people have been seriously injured by falling down cellar stairs because of improper illumination or because the switch was not at the top of the stairs so that the light could be conveniently turned on. Good overhead lighting of the cellar is just as important as in other parts of the house. In the laundry, units similar to those in the kitchen, with outlets for electrical appliances, should be arranged.

Those who are not fortunate enough to live in a house need not be discouraged by their lighting problems, since the principles are practically the same, even in the tiniest apartment. Those who cannot afford expensive shades need no longer bear the torture of unshaded electric lamps. A piece of common wrapping paper, cut two inches deeper than the lampshade and two and one-half times its circumference, may easily be brushed over with boiled linseed oil, obtainable at any paint store, and be thus converted into so-called parchment paper. It is necessary to stand this on edge and allow it to dry 24 hours before using. Pleated shades are exceedingly easy to make from this. The paper should be folded in half, each half again in half, and so on until all is pleated to the desired width. Holes may be made with an ordinary punch through which ribbon or cord may be drawn, and the shade may be held on the wire frame by making a half punch on the inside of each pleat near the top. Into this row of half punches the frame will easily fit. Decorations for such frames are exceedingly simple.

It will be seen, then, that the chief underlying principle of illumination is well distributed adequate light without glare. To be sure, it is sometimes difficult to tell just what constitutes an adequate amount of light. A foot-candle is taken as the unit of measurement of light, just as an inch or an ounce may be considered a unit along other lines. On a bright sunny day in summer on the golf course there are about 10,000 foot-candles of light. Under the shade of a tree on the same course there are about 500 foot-candles. It is surely, therefore, not too much to ask that from 10 to 35 foot-candles of artificial light be provided within the home. There is little probability of getting too much light; the avoidance of glare is the important consideration. Glare may be defined as any form of illumination that causes discomfort to the eyes.

To sum up, lighting the home for health and happiness, if these principles of adequate light without glare are put into effect, the eyes will be enabled to render their full service, and unless there is some difficulty with them, to render it gladly and willingly. If beauty and harmony are borne in mind in the choice of the type of unit and the color scheme of the home, the æsthetic sense will be gratified and the home should be a pleasant place in which to live. And, who knows, perhaps as these minor irritations are smoothed away, the dispositions of those making up the household will become so much brighter and sunnier that the home will be illuminated from within.

# Responsibility of New York State to Prevent Blindness

Grace S. Harper

**W**HAT a state can do to protect its citizens from blindness is described in detail by Miss Harper, who relates the experience of New York. State commissions for the blind, departments of health, or other state bureaus responsible for such work, may find here, perhaps, a few suggestions for enlarging their programs.

## Formation of Prevention Department

**W**HEN a state department is first created to help its blind citizens, the existing needs of the blind are paramount. As a large percentage of blindness is preventable, the state is soon confronted with the duty to prevent the loss of sight as well as to ameliorate the condition of those who are already blind. Education is necessary here, as in other fields of medical and social progress, and though slow to show results certain definite gains may be seen over a period of time.

For many years the New York State Commission for the Blind has arranged for eye examinations and has helped the individual threatened with loss of sight. During this time, evidence of a wider responsibility towards prevention was shown by the establishment of an eye clinic at Sing Sing prison and the assignment of three social service nurses to eye clinics in New York City, Brooklyn, and Syracuse. This demonstration of follow-up care on eye cases resulted in two of the nurses being taken over by the hospitals. Over the same period, social case work was recognized as a function of visiting home teachers and the medical significance of eye conditions in relation to their work was taught to the teachers on the staff. This service is now showing results. About 500

signed medical reports are obtained by home teachers, annually, in addition to the medical social work done by consultant nurses. Arrangements for operations and treatment are carried out on the recommendation of eye specialists. This service, however, limited the undertaking of the Commission to what its own staff could accomplish without creating local initiative and responsibility within the public health and educational groups.

Recognition of need for preventive work as a major responsibility took definite form in 1927 when a special Department for the Prevention of Blindness was organized under the direction of Miss Sarah A. Clendinning, R.N. Aims for a state-wide prevention program were outlined as a guide, but as the number of workers was limited to a director and two consultant nurses, it was decided to emphasize selected educational measures and not to undertake too ambitious a program at first.\* The third year of this more aggressive effort to decrease blindness in the state has now come to a close. Such progress as the Commission has made towards its aims and general educational work has been critically reviewed. Certain definite needs are clearly indicated for future development. As will be seen from the following record, emphasis has been laid on the education of professional workers in the fields of health and education; sight conservation work for school children, including instruction in eye testing for those of preschool age; and intensive effort to reduce infant blindness.

### **General Educational Work and Assistance to Professional Groups**

Addresses and short talks on eye conditions which may result in blindness, and measures for prevention, have been given to groups of health officers, public health nurses, students, women's committees and the general public. Fifty-six groups have been reached in this way, representing approximately 2,207 persons. These talks on prevention referred to prenatal care as contributing to normal vision at birth, the seriousness of "Babies' Sore Eyes," simple explanations of certain eye diseases and the need for early eye examination.

At the request of the State Department of Education, six lectures have been given at State Teachers College, Buffalo, for two

\* See Annual Report New York State Commission for the Blind, 1929.

successive years. Student nurses and hygienists have attended these lectures which in the first year included the anatomy of the eye, eye hygiene, eye diseases which may result in blindness, demonstrations of eye testing of small children, and procedure for the selection of children for sight conservation classes. The second year, a similar course was given jointly with the National Society for the Prevention of Blindness. For two successive years, lectures have also been given to the senior student nurses at the Physicians Hospital, Plattsburg.

The state is districted into 15 public health units comprising 57 counties, exclusive of New York City. Eleven of these geographical health units have been reached through the annual institutes for public health nurses and in smaller conferences. At these institutes, workers from 30 counties have been present, including doctors and social workers. School nurses have manifested great interest and have later sought advice regarding eye conditions in their special localities. The subject has also been presented to other groups such as the State Nursing Association, Committees of the State Charities' Aid Association, and 13 audiences representing the general public.

**Educational Literature.**—Pamphlets on the care of the eyes have been circulated throughout the state. By permission of the National Society for the Prevention of Blindness, reprints of several of their publications have been issued. These include, "Care of the Eyes," "Eye Troubles in Middle Life and Later," Dr. Park Lewis' book *What Every One Should Know About Eyes*, and others. A total of 53,643 pamphlets and folders have been distributed at conferences and through other sources.

### **Sight Conservation Work for School Children**

**Demonstrations of Eye Testing.**—Until a short time ago eye testing was not considered practical for very young children because of their inability to read. A fine technique must be used with a special understanding of the child's mental attitude in order to secure accurate results. These demonstrations, which were first started as an exposition of the technique of eye testing have gradually been changed to instructional service which prepares a nurse or teacher to make the tests herself. In simple demonstra-

tions, the equipment used is explained and children's eyes are tested as an example of procedure. Sixty-five of these have been given during which 1,466 children were tested. This included two extended trips with the Type "C" Traveling Clinic of the State Board of Health. This traveling clinic functioned in three counties over periods of twenty-two days and one month respectively; 984 children were tested. Health officers, physicians, public and private nurses, and parents were present. In 21 of the localities where demonstrations were given, requests have been received for further assistance and eye testing of kindergarten and first grade pupils has become a part of the school program.

When instruction in eye testing is given to nurses or teachers, the equipment and methods are explained and the student takes part in the testing, receiving correction and help in connection with the proper procedure on each case. The process is repeated until the student can satisfactorily test a child herself, under the supervision of the Consultant Nurse. Fewer children are tested during an instructional period than at a demonstration, and much more time is necessary. Twenty-seven instructional periods have been given at which 353 children were tested. In all of the localities where individual instruction has been given, eye testing has been continued as part of the annual school program.

**Sight Conservation Classes.**—The Commission has co-operated with the State Department of Education in securing lists of children eligible for sight conservation classes. Special work has been done in Nassau County where every superintendent and district superintendent was seen. These 25 school officials presented 165 records of children with eye conditions, from which eligible cases were selected. A history was obtained for each child and many eye examinations, also mental and physical examinations, were necessary in the process of elimination. The number was reduced to 59. This group was re-examined by an eye physician, for final recommendations. A sight conservation class will be opened in the fall. This will be the first county sight conservation class in the state.

As the result of a survey instituted by the Department of Education in Oneida County, children having visual defects were referred to the Commission. Three hundred children were given eye ex-

aminations, 54 of which received intensive follow-up care. As a result of this work a sight conservation class will probably be established.

Two other city surveys are in process along similar lines with a sight conservation class in view.

**Clear Type Textbooks.**—A number of school children having seriously impaired vision and who are unable to keep up with their regular grades are referred to the Commission from various sections of the state. These children are given eye examinations and if vision is such that they may be retained in the public school, and where there is no sight conservation class available, clear type textbooks are secured. These cases require one or more visits to the school. The principal and the teacher are shown the benefit of an adjustment which permits a pupil to remain in normal surroundings in spite of poor vision. As these children require more than merely the supplying of clear type books, and as the numbers referred from rural sections increases, the Commission feels strongly that there is a greater piece of work to be done with this group.

**Adjustment of Lighting and Seating in Classrooms.**—At the request of school officials lighting methods and seating arrangements in classrooms have been observed and suggestions given for more suitable arrangements. These requests were an outgrowth of contacts made at eye-testing demonstrations and sight conservation surveys.

### **Co-operation in the Establishment of Eye Clinics**

In counties where there is no free eye service available an effort has been made to stimulate interest in the need for eye clinics. At the close of the year final arrangements were completed for the inclusion of an eye clinic in a new county hospital in the southeastern part of the state. Interest and support were obtained, in part, through talks given by the Director before the County Medical Society, to ophthalmologists and local welfare groups. In two other counties the Commission has been asked to assist along similar lines.

### **Study of Ophthalmia Neonatorum Cases**

By arrangement with the State Department of Health, ophthalmia neonatorum cases are followed up by the Commission for

the Blind after an initial visit has been made by the Department of Health. The Commission has secured important information in connection with these cases, covering medical attention at birth, the use of a prophylactic, delays or failure to arrange for hospital care, too early discharge from hospital, and other factors which influence the care of these infants.

During the three-year period 163 cases have been registered. In the first year seven babies became blind. In the second year three babies lost their sight completely; a fourth lost the sight of one eye; two have only partial vision. Fortunately no baby has lost vision from ophthalmia neonatorum during the year just completed. The unremitting concern of the Department is partly responsible for this record for the third year. Several babies were re-hospitalized when visited, because of too early discharge and without special nursing care being provided in the home. The Commission feels gratified to have made a beginning toward the adjustment of difficulties which have combined to cause damaging results in some of these cases. The weaknesses in procedure have been found and point the way to correction. As there were a number of babies for whom positive smears were obtained, who were not hospitalized and for whom there was not adequate nursing care at home, this would indicate that those in charge had found it difficult to arrange for hospitalization, especially in indigent cases. This has influenced the Commission, with the endorsement of the State Department of Health, to petition the legislature for a revolving fund for ophthalmia neonatorum. This fund is to be used for emergency nursing care and hospitalization pending arrangements with officials who are responsible. The following announcement is made to all health officers and is to be circularized among the physicians of the state:

“The New York State Commission for the Blind is concerned that any baby in the state should become blind from ophthalmia neonatorum. The Commission now has an emergency fund which may be used to obtain immediate hospitalization, when difficulties in the usual procedure arise.

“The Commission does not assume the constant expense of hospital care for these babies but will underwrite it, pending necessary arrangements for payment to be made through responsible sources, in order that care may be secured without an hour's delay.

"The Commission may be reached by long distance telephone or telegram. Cases needing hospital care while the Commission office is closed and cannot be reached, may be sent into the hospital on the responsibility of the Commission; notification must be sent to the Commission office in New York City, immediately."

In special cases where parents at first refuse to accept hospitalization for the baby or when other adjustments are necessary, pending admission to a hospital, the Commission has authorized and met the expense for special nurses in the home.

The above statement takes into account only the service rendered where eye infection has appeared. The Commission does not lose sight of the fact that education is necessary to prevent the occurrence of eye infections in the newborn, through prenatal care. The program for prenatal work as conducted by the State Board of Health has had the active support of the Commission which has taken part in the formation of committees to further these methods of prevention.

#### REGISTRATION OF OPHTHALMIA NEONATORUM CASES

1928-1931

	1928-1929	1929-1930	1930-1931	Total
Number of cases registered . . .	44	62	57	163
Number of home visits made . .	19	67	57	143
Follow-up correspondence . . . .	108	64	90	262

#### Findings:

Prophylactic used . . . . .	38	50	48	136
Prophylactic not used . . . . .	4	9	6	19
Incomplete data . . . . .	2	3	3	8
Delivered by doctor . . . . .	38	55	46	139
Delivered by midwife . . . . .	2	1	2	5
No attendance at birth . . . . .	2	6	6	14
Incomplete data . . . . .	2	0	3	5
Complete recovery . . . . .	33	54	50	137
Blind . . . . .	7	3	0	10
One-eye blind . . . . .	0	1	0	1
Partially sighted . . . . .	0	1	0	1
Impaired vision . . . . .	0	1	0	1

*First Year    Second Year    Third Year    Total*

#### Result of Smears:

Positive G. C. . . . .	10	34	29	73
Negative . . . . .	0	15	15	30
Not taken or not reported . .	33	13	14	60

# ANALYSIS OF CARE OF THIRTEEN INFANTS TOTALLY OR PARTIALLY BLIND FROM OPTHALMIA NEONATORUM

														Total
Case No.....	1*	2	3	4	5	6	7	8	9	10	11	12	13	13
Blind.....	X	X	X	X	X	X	X	..	X	..	X	X	..	10
One-eye blind.....	..	..	..	..	..	..	..	X	..	..	..	..	..	1
Partial sight.....	..	..	..	..	..	..	..	..	..	X	..	..	X	2
Prophylactic used..	X	..	..	..	X	..	X	X	X	..	X	X	X	8
Non use of prophylactic at birth...	..	X	..	..	..	X	..	..	..	X	..	..	..	3
Use of prophylactic unknown.....	..	..	X	X	..	..	..	..	..	..	..	..	..	2
No physician at birth.....	..	..	X	..	..	..	..	..	X	X	..	..	..	3
Not hospitalized, inadequate nursing care at home	X	X	..	..	..	..	X	..	..	X	..	..	..	4
Delay in hospitalization.....	..	..	..	X	..	X	..	..	X	..	X	..	..	4
Too early discharge from hospital....	..	..	..	..	X	X	..	X	..	..	..	..	X	4

\* Born in Pennsylvania—eyes were infected when moved to New York State.

Reviewing the 163 cases registered, reasons for loss of vision are attributed to:

1. Failure to use a prophylactic at birth in some cases.
2. Too little effort to hospitalize cases even when positive smear was obtained.
3. Lack of provision for adequate nursing care at home, in most cases where babies with positive smears were not hospitalized.
4. Too early discharge by hospitals before securing two negative smears.
5. Apparent lack of consultation with eye physicians in cases of eye infection, even though positive smears were obtained.
6. Failure to recognize the dangers of an infected eye when the smear is not positive, on the assumption that the condition may not be serious.

With reference to an apparent indifference to the possible seriousness of cases where a first smear is negative, it is interesting to note the number of cases registered by the State of Massachusetts for the year 1929 when 1,399 were registered, 45 were gonococcus infection, showing that all eye infections are reportable, whether or not the smear is positive.\* The care taken by some hospitals is encouraging. In one case 38 smears were taken for each eye, all of which were negative, before the baby was considered safe for discharge. Mention should also be made of a few cases where the attending physician, recognizing the lack of resistance owing to poor nutrition (premature births), called in a pediatrician. Sight in these cases was saved.

### Research Work

It is with regret that very little work in the research field can be noted. With several thousand medical histories available, the Commission hopes to undertake studies which will be of service in prevention work. County surveys are being made throughout the year and are of special interest in the field of prevention, in that the eye diagnosis and causes of blindness are ascertained and classified for further study.

Case histories of sympathetic ophthalmia following eye injuries are being taken each year, to be added to the special study started in 1928. It is felt that this material will be of peculiar value inasmuch as the final results of cases of eye injuries are not usually known to the eye specialists who originally examined them. As far as we know, conditions existing prior to the total loss of sight from sympathetic ophthalmia, following accident, are not generally available for analysis through clinical records. As the number of these cases is limited in each state, it is urged that other commissions accumulate reliable information on sympathetic ophthalmia for study.

\*See report, *Prevention of Blindness in Newborn Babies*, issued by the National Society for the Prevention of Blindness, 1931.

## Editorials

### National and Local Prevention of Blindness

“**W**HAT function has a national organization in those communities where there are state or local agencies?” is a question occurring to hundreds of national volunteer agencies. Perhaps the answer is: The same relationship that the Federal Government has to state government, or that the state governments have to the municipal governments. In other words, there are certain national aspects that occur locally with which the national agency is best equipped to cope, or in which the co-operation of the national agency is essential to the best interests of the problem.

The National Society for the Prevention of Blindness has found it necessary to conduct an ever increasing program even though local programs are springing up all over the country. Indeed, the more local agencies there are, the more adequately the National Society feels it can function. In many instances the local organizations are growths of the seeds carefully sown throughout the past decade by the National Society and its constituents.

It seems necessary to restate occasionally the place of the National Society in relation to local agencies for saving sight. In order to help in such an evaluation, the SIGHT-SAVING REVIEW, beginning with this issue, is presenting a series of articles describing the activities of various state and local, official and unofficial, organizations engaged in prevention work. With this in mind, the REVIEW presents as the first of the series, discussions of the Society's activities and the activities of the official agency of New York State, the Prevention of Blindness Department of the Commission for the Blind of the New York State Department of Social Welfare. The Editors feel this is a particularly happy combination, first, because New York State is the locale of the National Society's modest beginnings and second, because the taking over of prevention work in New York by the State exemplifies the ideal functioning of a co-operative effort between an official state organization and a national volunteer society.

The origin of any volunteer welfare agency is traceable to the realization of a social need not being adequately met by state or local official agencies.

Thus, when in 1908 a few public spirited people in New York State became conscious of the number of children who were blind in their state from preventable causes, chief among which was ophthalmia neonatorum, they felt that something must be done about it. They discussed ways and means of influencing the state legislature and educating the public in the necessity of using prophylactic measures to prevent ophthalmia neonatorum or "Babies' Sore Eyes," as it was popularly called. And with those few objectives the volunteer agency, the New York State Committee for Prevention of Blindness, was formed. The history of the National Society for the Prevention of Blindness dates back to this simple beginning. When, by 1915, it was found that the work of the New York State Committee was really of necessity national in scope, the National Committee for the Prevention of Blindness was established, retaining the New York State organization as a standing committee. Still later, the name was changed to the National Society for the Prevention of Blindness.

Of course it must be remembered that official agencies such as state departments of education, state departments of health, the labor bureaus, and others, have all along, in some of their aspects, participated in saving sight. After the New York State Commission for the Blind established a Prevention of Blindness Department in 1928, co-operating with the National Society, the New York State Committee for the Prevention of Blindness was eliminated as a separate entity. Such a co-operative relationship is, in fact, only one example of many that could be named. How some of the other localities meet their sight-saving problems will be the subject of future articles appearing in the REVIEW.

### **"The Right to be Blind"**

Since the veto by the Governor of Illinois of a bill compelling the instillation of silver nitrate or some equally effective prophylactic into the eyes of babies at birth to prevent ophthalmia neonatorum and consequent blindness, a wave of moral indignation has swept over the social welfare and medical worlds. The SIGHT-SAVING REVIEW can do no better than to quote from *The Survey*, one of the many magazines whose editorial columns expressed the feeling among welfare workers:

"Among health organizations there are few records as clear and convincing as the showing of the National Society for the Prevention of Blindness as to the decline in blindness among newborn babies since statutes have compelled the use of silver nitrate at birth. Yet a few weeks ago Governor Emmerson vetoed a bill to this effect in Illinois, on the basis of an opinion by the attorney-general that the measure exceeded the police power of the state and that 'the individual has certain fundamental rights which must be respected.' An effort to pass the bill over the veto failed in the senate. The loss of sight is an incapacity equivalent to death in a schedule for evaluating industrial accidents recently published by the Association des Industriels de France and now under discussion by the International Labor Office. Even to this extent newborn babies in Illinois continue to enjoy their inalienable and constitutional rights."

The outlook is not as gloomy as it appears, however. After all, the bill passed the house and lacked only a few votes to pass the senate, over the governor's veto. The Illinois Society for the Prevention of Blindness continues to bend its forces to the cause. There are future meetings of the legislature to which the people of Illinois can look with confidence.

## Note and Comment

**Prevention of Blindness in Canada.**—Although the formal movement for the conservation of vision in Canada is still in its infancy, the Prevention of Blindness Department of the Canadian National Institute for the Blind has undertaken a broad educational program throughout the provinces to reduce preventable blindness. Making their strongest appeal through public education, and with the help and co-operation of other social and medical agencies, the Prevention of Blindness Department has seen instillation of silver nitrate in the eyes of newborn babies become compulsory in six of the nine provinces; it has instigated and inspired the routine eye examinations of school children; it has encouraged the establishment of sight-saving classes and added to the knowledge of eye conditions and hygiene among public health nurses; the eyes of industrial workers have profited by its campaign for industrial safety, and children have learned to avoid activities involving eye hazard.

Following the example of the National Society for the Prevention of Blindness, the Prevention of Blindness Division of the Canadian National Institute for the Blind has acted as a demonstration center and co-ordinating unit in the spread of knowledge and technique for prevention of blindness and conservation of sight. From its headquarters in Toronto, articles in popular journals, talks to mothers' clubs and other community organizations, illustrative material in the way of posters, slides, and motion pictures have reached many corners of the Dominion with their message of saving sight.

**The Handicapped Child in China.**—The education and care of the physically handicapped, so long left to the kindness of the fates in China, is at last receiving the attention of authorities, according to George B. Fryer, in the March *Teachers' Forum*. Of all those handicapped, the blind are the most unfortunate, due to superstition and prejudice, and for centuries the blind have been outcasts and pariahs. In prevention of blindness work, an investigation is being made to ascertain the conditions of the eyes

of school children. It has been found that about fifty per cent of them are suffering from trachoma and other eye troubles. Maternity hospitals and baby clinics have been established to insure better attention to the eyes of infants.

Mr. Fryer, looking beyond the immediate needs of the blind, says: "With regard to prevention of blindness, we have not been able to do much except in the way of publicity work. The need of a Prevention of Blindness Society is very great, and we sincerely hope the way will be open for one to be started in the near future."

**The Eyes in Seasickness.**—Much has been written on the psychological and physical causes of seasickness. The general opinion has been that there is a very close relationship between the semi-circular canals and a tendency toward seasickness. It is generally believed that much seasickness is due to mental suggestion. In a recent group of articles on seasickness appearing in the *British Medical Journal*, Martin Flack, director of medical research of the Royal Air Forces of England, presented the experiences of testing muscle balance of the eyes of aviators. According to the tests made, it was found that when the muscles of the eye do not make compensating adjustments to changes in the labyrinth and kinesthetic centers, this imbalance is a predisposing cause of seasickness. It testified further that during a recent voyage of a transatlantic liner the good sailors showed that they had perfect eye muscle balance, while the poor sailors all showed a marked imbalance of eye muscles before and during the acute stages of the sickness.

**Conference on Lighting in Industry.**—A lecture on industrial lighting recently given at the Royal Society of Arts in London brought some interesting points into discussion. Sir John Parsons who presided at the meeting, stated that the problem of illumination cannot be considered alone; it is closely linked with the function of the visual organ, a factor which cannot be held constant. He urged a greater co-operation between the lighting experts and the authorities on the eye. Mr. D. R. Wilson, deputy chief inspector of factories, pointed out the benefits which are directly observed in improved plant illumination. Mr. J. H. Fisher added that while factory workers did not have the ideal lighting

conditions in their own homes which are found in factories, education and example might teach them the importance of adequate lighting at all times.

**Prevention of Blindness in Manitoba.**—A recent survey of health conditions in Manitoba has revealed that trachoma exists in ten per cent of the people of the Mennonite sections, in the southeast section of the province, and that one-seventh of the population are suffering from some sort of eye defect. Steps are to be immediately taken to prevent the spread of the disease, and to treat those already infected. In reporting the steps already taken to prevent blindness in children, the deputy minister of health stated that the department has made compulsory the reporting of all infectious eye diseases in the young infant, and that ampules of silver nitrate are being distributed free of charge for use in the eyes of the newborn babies. A law compelling the use of this prophylactic for all newborn infants is being urged. Inspection of the eyes of school children is followed up by visits to the home by public health nurses, and in cases where the family is unable to supply the child with proper ocular care glasses are supplied free.

**Pointed Editorial on Eye Health for Children.**—The official organ of the Westchester County Department of Health, *Westchester's Health*, in its June 15 issue, contains an important lesson not only for parents, but for all who are concerned with the individual and community aspects of child welfare. A six-year-old child, considered rather stupid not only at school but at home, was found to have seriously defective sight. The day after she had been fitted with her corrective glasses, she didn't come to school because, looking into the shop windows she saw such fascinating displays of fruit and cakes, of dresses and millinery, and, she explained to the teacher, "There was never anything there before."

"What can be done to remedy the situation?" asks the editorial. "The schools nowadays frequently discover the serious defects, but previously the child has failed to develop as he should. The best time for correction is during the preschool age. . . . The child will not outgrow his poor vision, and a parent who permits anything to stand in the way of correcting such a defect is handicapping the child, perhaps for life."

**Blindness in China.**—Fully one-eighth of the blindness in China is caused by inadequate nutrition, says Dr. Lossouarn, Director of the Medical College of Tientsin, in a recent issue of the *Review and Information Bulletin of the League of Red Cross Societies*. "An eye is worth less than an egg," he finds, for much if not all of the xerosis among laborers could be eradicated by the addition of one egg a week to the diet.

In order of frequency, the six principal causes of blindness in China are: smallpox, xerosis, trachoma, syphilis, gonorrhea and local customs. Ulcers of the eye are pierced with pins, lamp wicks are used to rub the diseased cornea! In the battle against the appalling blindness of China, the Chinese League for Prevention of Blindness has laid plans to administer smallpox vaccination, to treat and prevent xerosis, to teach and encourage personal hygiene, and to decrease the amount of syphilis. Four dispensaries for the treatment of eye diseases are maintained in Tientsin and, with the help of the medical missionaries, the work is being carried into the interior. Prevention of blindness, still in its embryonic stage in China, presents a tremendous task, but one of everlasting mercy.

**World Co-operation in Ophthalmology.**—The Amsterdam Congress of 1929 showed the wisdom of pooling of knowledge for the common good, says a recent editorial in the *American Journal of Ophthalmology*. International eye problems are receiving the combined fruits of knowledge and practical experience; the work of trachoma prevention in Egypt has its lesson for China, London, Finland and the mountain regions of Kentucky. India has contributed to the knowledge of the western world in the treatment of glaucoma and cataract, while European and American medicine has greatly aided the work of blindness prevention in the Orient. The coming international Congress in Madrid opens fresh vistas of the help the world in general may both contribute and receive.

**The Eyes of London's School Children.**—The importance of adequate light in schools was very strongly emphasized in the findings of the eye examination of a group of school children, according to the most recent report of the chief medical officer of the Board of Education of London. It was found, on checking the illumination in the schools, that in those schools where the lighting

arrangements are definitely poor, there is a higher number of children with vision defects. Another interesting disclosure indicates that one-quarter of the children complaining of poor eyesight or eye-strain were found to have physically perfect eyes, their defects being psychological rather than physical. In the year's work the need of extending the examination of eyes into the lower grade groups and the preschool age groups was made increasingly evident.

**Control of Syphilis in New York State.**—Because syphilis is one of the major causes of blindness, any program for its control has special interest for those interested in the prevention of blindness. In New York State a special health commission has been devoting its efforts during the past year to a study of the possibilities of the control of syphilis. The recommendations of the commission include; (1) state aided and state-wide system of county boards of health; (2) similar clinics for cities; (3) extension of diagnostic laboratories; (4) free distribution of arsphenamines to all physicians; (5) facilities for treatment of all cases, regardless of ability to pay; (6) state-wide education.

**Sight-Saving Classes Urged for Europe.**—In a recent address to the Child Welfare Committee of the League of Red Cross Societies on the education of blind children, Dr. F. Humbert, secretary-general of the International Association for the Prevention of Blindness, urged the need and desirability of sight-saving classes for children with partial vision. Pointing out that children with 1/10 of normal sight have been successfully educated without detriment to their sight through the methods first established in the myope classes in England and perfected in the sight-saving classes of the United States, Dr. Humbert suggested study and research into the number of children needing this special care, recommending that governments establish such instruction on a free compulsory basis.

**Anti-Trachoma Efforts in Japan.**—As a part of their recognition of trachoma as an international problem, the Anti-Trachoma League of Japan has offered its co-operation to the International League. Under governmental auspices, a course for general practitioners and health officers in detection and treatment of trachoma

will be given by Dr. Shinobu Ishiwara, professor of ophthalmology at the Tokyo Imperial University, in those prefectures from which emigrants depart to South America and other countries.

**Styes, A Danger Sign.**—In a paper read at the December meeting of the Kansas City Society of Ophthalmology and Oto-laryngology, Dr. F. C. Boggs stated that while the literature of science has very little to say about styes, folklore holds many reasons and many cures for them. As a rule there is an underlying physical disability causing styes, while inflammation of the nose, throat or sinus also accounts for their appearance. Treatment may be local, but cure is effected through diet and general improvement of nutrition.

**The Eyes and Moving Pictures.**—Dr. E. Nicholas Hughes, a school medical officer in England, writing on the effect of moving pictures on the eyes, reports that a great many children complain of headache or eyestrain after seeing a motion picture. Although some of these children are in need of refraction, many have normal eyes. He recommends that children be barred from sitting in the front seats of the motion picture theatre, since from a close position the picture is blurred and dazzling. From an entirely different angle, David Levinson, in the *Motion Picture Projectionist*, claims that motion pictures do not impose any strain upon the eyes, although eyestrain may arise from poor projecting or poor quality of film, while any uncorrected defect in the eyes of the observer is aggravated. A defect in the vision of the operator might cause the film to be thrown out of focus. Proper illumination of the theatre and care of the projecting machine are of paramount importance in providing pictures which do not tax the eyes of the audience.

**Wasted Effort in Clinics.**—In an editorial in the May issue of the *American Journal of Ophthalmology*, a particularly pertinent comment is made upon a common fault of public eye clinics. With all the facilities for excellent work in remedying eye disease and preventing blindness, the clinic cannot do a complete job without the co-operation of its patients. Quoting figures which demonstrate the number of treatments which are begun and the few

which are completed, the editor recommends: "For the benefit of the individual patient, and for the accumulation of experience which can be applied to the relief of future sufferers, there is probably no wiser expenditure than that which is devoted to follow-up work."

**Ophthalmia Neonatorum in Maryland.**—Of the 24 children recommended for admission to the Maryland School for the Blind during 1928–1930, only two were victims of ophthalmia neonatorum. In 1905, 40 per cent of the new admissions were cases of this unnecessary cause of blindness. Of the total enrollment of blind pupils, in 1905, 27 per cent were blind because of ophthalmia neonatorum, while in 1930 the schools had only nine per cent blind from this cause. Dr. James J. Carroll, ophthalmologist, concludes his report by pointing out that through the universal use of Credé prophylactic, this tragic cause of blindness may be eliminated almost entirely.

**Seeing for Sport.**—At the 1931 meeting of the Ophthalmological Society of the United Kingdom in London, April 23 to 25, Air Vice-Marshal Sir David Munro read a paper on "Vision in Sport." He pointed out that the ability to see, coupled with the muscular co-ordination and good visual judgment, is an important factor in games. The importance of ocular balance is seen in all games which need judgment of distance, such as ball games, golf and tennis, shooting, and aviation.

**New Eye Institute Planned.**—To all interested in the varied phases of prevention of blindness, the initiation of a new eye institute as part of New York's Medical Center will be of particular note. The gift of Mr. Edward S. Harkness to the Presbyterian Hospital, the eye institute will be the first of a group of special hospitals to be added to the facilities of the Medical Center. Beds and treatment will be offered to sufferers from eye disease. The institute, further, will offer special research opportunities, teaching and training to medical students and nurses in ophthalmology. Dr. John M. Wheeler will direct the work of the institute.

**Trachoma Battle in Brazil.**—The office of chief ophthalmologist, with the duty of organizing clinics for treatment, has been created

in Brazil to aid in the fight against trachoma and other eye diseases. Immigration regulations will prevent infectious patients from entering the country, and throughout the nation information on eye hygiene and sight conservation is being disseminated.

**A New Hazard to Children's Eyes.**—From the *Journal of the American Medical Association* of April 11 comes the story of a Negro baby girl, nineteen months old, who narrowly escaped death and has acquired complete optic atrophy from lead poisoning, caused by eating paint from the porch railing. At the same time comes the warning from the *National Safety News* to keep lead paints out of the environment of young children. Dr. Frank G. Pedly, in the *Journal of Industrial Hygiene* for December, 1930, points out the relationship between lead poisoning and vision. The new quick-drying enamels and indoor finishes do not contain lead, and are non-poisonous. In view of the universal habit of infants and young children to gnaw and bite on toys and furniture in their environment, it would be wise for manufacturers of children's toys and furniture to see to it that all paints used for furniture and toys be of non-poisonous nature, and for parents in buying these articles to specify non-poisonous finishes.

## Current Articles of Interest

**The Significance of Failing Vision**, J. Guy Jones, M.D., *Texas State Journal of Medicine*, April, 1931, published monthly by the State Medical Association of Texas, Fort Worth, Texas. Deterioration of vision may be from many causes, and simple refraction of visual errors will not only not help, but will frequently hide the real cause of failure until it is too late to correct it. The co-ordination of ophthalmologist and internist is vital to prevent the advance of conditions affecting the general system.

**Why are Albinic Children Educated in Schools for the Blind?** *The Teachers Forum*, May, 1931, published 5 times a year by the American Foundation for the Blind, Inc., New York, N. Y. That the partially seeing albinic child is frequently educated in schools for the blind is to be regretted, in view of the fact that he cannot resist the temptation to read Braille with the eyes instead of with the fingers; because, with his greater amount of vision, he is constantly tempted to help through his own eyes, the blind companion, to the detriment of his own work and to the spoiling of character of the blind child; because his vocational training is blind training, and his chances for earning a livelihood are lessened. Although it may be better for the albino to attend a good school for the blind than to suffer the humiliation of disregard of his affliction in a poor regular school, educators and those concerned with the welfare of the children should advance the establishment of sight-saving classes to care for these and other partially seeing children.

**A Medical Problem that Became a Psychological Problem**, Louise Nelson, *Mental Hygiene*, April, 1931, published quarterly by the National Committee for Mental Hygiene, Inc., New York, N. Y. A boy 18 years old, displaying average intelligence in other scholastic fields, continued to fail in his reading courses. His intelligence and performance tests showed normal results. Upon examination, it was discovered that he had suffered a slight injury to one eye which had made uncorrected use of that eye painful and tiring. Although glasses corrected his vision defect to

a large extent, the previous discomfort of reading had conditioned him against this activity. The writer concludes, "Had the eye defect been discovered and diagnosed before the reading stage, and glasses prescribed, Thomas might have had a much more satisfactory emotional and school life. . . . His experience suggests the advisability of an early and thorough examination of the sensory organs of children before entrance to school, with equally thorough periodic subsequent ones."

**Babies' Eyes in Summer**, B. Franklin Royer, M.D., *Hygeia*, July, 1931, published monthly by the American Medical Association, Chicago, Ill. Strong sunlight, dust and flies of summer add to the natural dangers which imperil the eyesight of young babies. The writer advises on protection of the eyes during sunbaths, and warns of the menace of dust, insects and strong wind.

**Analysis of 1,000 Examinations of Eyes for Compensation Purposes**, M. Davidson, M.D., *The Industrial Bulletin*, May, 1931, published monthly by the Industrial Commissioner of New York State, Albany, N. Y. In analyzing 1,000 claimants for eye compensation, the writer, staff ophthalmologist in the New York Office of the Division of Workmen's Compensation, not only presents technical studies on methods of examination, but he finds that: (a) malingering is not so frequent as generally believed; (b) acceptance of 20/20 as normal vision works to the disadvantage of many claimants whose normal vision exceeds this amount; (c) definite diagnosis of visual loss due to hysteria or neurosis should be made only when supported by a neurologist; and (d) a standard test type and form of illumination is advisable.

**Daylight Without Glare**, R. A. Miller, *National Safety News*, June, 1931, published monthly by the National Safety Council, Chicago, Ill. In the effort to obtain maximum benefits of daylight without glare, the illumination engineer must look to the type of window glass used in the plant. The diffusing glass most efficient is that whose surface most closely approximates plate glass, permitting an equal distribution of light without causing sudden streaks and areas of glare. In conjunction with the problem of maximum daylight arises the question of interior paint and the use of mirrors to amplify the available daylight.

**Myopia: Cause, Progress, and Treatment**, Meyer Weiner, M.D., *Southern Medical Journal*, June, 1931, published monthly by the Southern Medical Association, Birmingham, Ala. Outlining the literature on myopia, the author finds it a peculiarity of higher civilization. Infants are hyperopes; among savages and people of low culture there is little myopia, while with the increase of learning, seen in the school child and to a greater extent in the college student, myopia may reach as high as ninety per cent of the pupils. There is no proof that intensive eye work causes myopia, nor that poor lighting is a contributing cause. Various authorities have pointed out the coincidence of myopia in parents and offspring, suggesting that it is an inherited defect. Progressive myopia may often be checked by an improved diet and adequate correction, while persistent progressive myopia should lead to suspicion of endocrine disturbance.

**Glaring Causes of Accidents**, *The Travelers Standard*, June, 1931, published monthly by the Travelers Insurance Company, Hartford, Conn. The sense of sight, responsible for about 70 per cent of our reactions, is lessened or lost entirely in the presence of glare. Exposed light filaments, uncovered light sources within the range of vision, or strong reflection from light-reflecting surfaces are annoying and hazardous sources of glare. The writer urges a greater realization of the danger accompanying excessive glare and the importance of correcting it.

**The Control of Trachoma**, N. Bishop Harman, *American Journal of Ophthalmology*, April, 1931, published monthly by the Ophthalmic Publishing Company, Saint Louis, Mo. The author points out that although the cause of trachoma is still in question and its extermination cannot be brought about until its cause is known, control of trachoma is definitely a practical possibility. He discusses the reduction of the number of cases in England in the last fifty years and points out that, though the cause is not known, it is found in places where dirt, squalor and crowded conditions abound, and that it is less likely to spread where social and living conditions are improved. In bringing about the control of trachoma, the writer advocates the raising of living standards and the exclusion of immigrants having trachoma, in addition to treatment of those infected.

**Early Treatment of the Cross-Eyed Child**, E. K. Hallock, M.D., *New York State Journal of Medicine*, June 15, 1931, published twice a month by the New York State Society of Medicine, New York, N. Y. The idea that children outgrow strabismus is responsible for the fact that they are often brought to the attention of an oculist too late for visual correction. Errors in muscle balance should be corrected early in life. Much of this imbalance is caused by a marked defect in one eye, throwing all of the burden of seeing upon the good eye, and disposing the poor eye to atrophy. Treatment consists in forcing the poor eye, after refractive correction, to do its share of seeing, either by binding up the good eye for a period, or otherwise withholding its sight until the defective eye resumes its activity. Operation for correction or for cosmetic reasons should be a last resource.

**Compensation for Injuries of the Eye**, Sanford R. Gifford, M.D., *Illinois Medical Journal*, April, 1931, published monthly by the Medical Profession of Illinois, Chicago, Ill. The physician who is called upon to testify to eye injuries for compensation insurance must carefully study the eye in fairness to the injured party and in fairness to the defendant. Firms or insurance companies who have made a previous record of the plaintiff's vision are protected from the claim that the injury has diminished sight, when frequently the sight is as it always was, and eye examination following the accident has only focused attention upon it. Pointing out the main injuries to the eye, and suggesting tests to determine the severity, the author warns against malingerers who claim loss of vision and suggests ways of determining the truth of their claims.

**Pennsylvania Goes Eye Health**, Evelyn M. Carpenter, R.N., *Pennsylvania's Health*, March-April, 1931, published bi-monthly as the Official Journal of the Pennsylvania Department of Health, Harrisburg, Pa. In the effort to keep at maximum level the health of the infant and of the school child, the health of the toddler is often lost sight of, but Pennsylvania is taking care of her preschool group. Not content to wait until these children are actually in school before visual defects become apparent, the State Department of Health has equipped a motor unit to go into the rural sections to find those young children whose eyes are in need of care. During the past summer 40,545 children were examined,

with the help of the State Council for the Blind who taught the Health Car personnel the technique of vision testing. The practicability and simplicity of the vision testing, the plan perfected by the National Society for the Prevention of Blindness, encourages the Department of Health to urge that this routine vision test be given to every child of four to six.

**Eye Protection**, W. T. Cameron, *Safety Engineering*, June, 1931, published monthly by the Safety Magazine Publishing Company, New York, N. Y. In a popular graphic style, the writer urges the necessity of eye protection in industry. As a representative of the American Optical Company, he is well acquainted with the types of goggles and eye protection of most value to particular types of jobs.

**Making the Blind See**, Louis Lehrfeld, M.D., *Hygeia*, June, 1931, published monthly by the American Medical Association, Chicago, Ill. Although many people suppose that a cataract is a growth over the eye, and the derivation of the word from the Greek shows the authority of this conception, cataract is in reality a breaking up of the crystalline lens. Diabetes, hardening of the arteries, and Bright's disease may predispose toward cataract; injuries to the eye may cause cataract, or it may be a congenital defect, inherited from father or mother. The operation of cataract is now universally accomplished with great facility by skilled physicians. Age is no bar to a cataract operation.

**Co-operation between the Oculist and the Oto-rhino-laryngologist**, George W. Schlindwein, M.D., *Pennsylvania Medical Journal*, June, 1931, published monthly by the Medical Society of the State of Pennsylvania, Harrisburg, Pa. The author points out many types of cases in which the oculist and oto-rhino-laryngologist may work together, notably in cases of retrobulbar neuritis, and concludes that in all obscure eye conditions, a full examination has not been made until the nose, throat and sinus conditions have been checked.

**More Light, Less Accident**, William E. Mates, *The Constructor*, October, 1930, published monthly by the Constructor, Inc., Washington, D. C. While fewer accidents happen on a construction job in June than in December, due to the longer hours of good natural light, many days and many jobs require supplementary artificial

lighting. There are a few rules which should be as rigidly enforced in temporary jobs as in permanent plants:

- (1) Lighting units must be evenly spaced.
- (2) Areaways, shafts, etc., should be especially lighted.
- (3) Reflectors should be installed to protect the eyes of the worker and increase the source of light.
- (4) Floodlights, out of the worker's way, available for many types of work and weather-proof, are the more efficient type of light for out-of-door work. The cost of good lighting is small beside the cost of labor, and immeasurably less than the cost of accidents.

## National Society Notes

SUMMER courses for training teachers of sight-saving classes have called upon members of the staff of the National Society for the Prevention of Blindness for lectures and teaching. Mrs. Winifred Hathaway, associated director of the National Society spent six weeks as a special lecturer at Teachers College, Columbia University, giving a course for training sight-saving class teachers.

The medical training of sight-saving class teachers has been provided by Dr. B. Franklin Royer, medical director of the Society, at Tulane University, New Orleans, La., at the University of Chicago, Chicago, Ill., at State Teachers College, Buffalo, N. Y., and at Teachers College, Columbia University.

Mr. Lewis H. Carris, managing director of the National Society, has lectured not only at these four universities giving specific sight-saving class courses, but has also spoken on the work of the National Society at the Public Health Institute at the University of Michigan, Ann Arbor, Mich., and at the University of Kentucky, Lexington, Ky. At the Winona Lake Child Health Week, given under the auspices of the Indiana State Board of Health as its state contribution to the White House Conference, Mr. Carris spoke on "Saving the Sight of School Children."

\* \* \*

From many sections of the country demands have come for the work of Miss Mary Emma Smith, director of nursing activities of the National Society. Since her return from a two months' tour of southern states, Miss Smith has demonstrated methods and materials of testing preschool vision in Pittsburgh, Pa., Wichita, Kan., and Keene, N. H.

\* \* \*

Miss Eleanor P. Brown, secretary, represented the National Society for the Prevention of Blindness at the meeting of the National Conference of Social Workers at Minneapolis, Minn., June 14-20. A booth was especially designated for exhibition of the Society's posters and publications, at which Miss Brown presided.

Miss Brown also attended the luncheon given by the Committee on Medical Social Service in Eye Clinics, held during the conference week, and was available for conferences regarding the various phases of the Society's work.

\* \* \*

Mr. Carris led the discussion, following the presentation of the Society's film, "Preventing Blindness and Saving Sight," at the Annual Meeting of the Medical Society of New Jersey, held in Asbury Park, N. J., June 5, 1931. The film formed part of a conference on the physician's part in sight conservation, at which Dr. Elbert S. Sherman read a paper on the general practitioner's rôle in the conservation of vision.

\* \* \*

Continuing its efforts in saving sight in industry, the National Society will be represented by two members of its staff, Miss Brown and Miss Isobel Janowich, editor, in the presentation of two radio talks to be given in New York City early in September, under the auspices of the Labor Union Safety Committee, appointed by Governor Roosevelt in 1929.

\* \* \*

While spending his vacation abroad, Mr. Louis Resnick, industrial relations director, had several conferences with Professor de Lapersonne, president of the International Association for the Prevention of Blindness, on the subject of eye accidents in industry and has conferred with Dr. F. R. Humbert, secretary-general of the International Association regarding various aspects of its work.

## Book Reviews

INDUSTRIAL ACCIDENT PREVENTION. By H. W. Heinrich. New York: McGraw-Hill Book Company, Inc., 1931. 366 p.

The incidental costs of accidents are at least four times the direct cost. Accidents are the responsibility of the employer. Prevention must be based on an analysis of the real causes. Such analysis shows that in 88 per cent of the cases the causes are supervisory—faulty instruction, unsafe practices and the like; only 10 per cent are physical and 2 per cent unpreventable. Determination of the real cause at once suggests the remedy which should be applied through regular operating management. General safety education is of limited value; “carelessness” is an alibi. Safety education must be specific. Psychological study of hidden causes is a new development of great promise.

This general thesis, already familiar to safety men who have followed Mr. Heinrich’s earlier writings, forms the main portion of his book and makes it a real contribution to the literature of industrial safety. In addition, a hundred-page chapter, profusely illustrated, is devoted to machine guarding; “process and procedure revision,” illumination and statistics are briefly discussed and appendices present statistical information as well as quotations from other writers on cause analysis and accident proneness.

The book is well written and the author’s points are driven home by a wealth of anecdotes and illustrations which reflect his rich and varied experience. . . . It can be read with profit by any executive or safety man, expert or novice. It adds new evidence to support the now familiar conceptions of safety as inseparable from efficiency and as an essential function of industrial management.

*National Safety News*

ARTIFICIAL SUNLIGHT. By M. Luckiesh, D. Sc. New York: D. Van Nostrand Company, 1930. 246 p.

This is an extremely readable and valuable contribution from the pen of Dr. Luckiesh, who is the director of the Lighting Re-

search Laboratory of the National Lamp Works, General Electric Company. Luckiesh has written several volumes, such as *Color and Its Applications*, *Light and Shade*, *Artificial Light*, and *Light and Work*, which will probably be of more direct application and therefore of greater interest to those in anywise interested in the eye and human vision. However, this is a day and age in which radiant energy and its influence on the human body are subjects of much experimentation and much in the form of clinical and research articles, as well as monographs.

The volume presents with accuracy and yet in a readily understandable form the essential facts and results of research regarding solar radiation, the effects of spectral energy, infra-red radiation, the measurement of ultraviolet radiation, electric arcs and the utilization of artificial sunlight.

Since this brochure is a general survey of the field of radiant energy (infra-red, visible and ultra-violet) particularly from the standpoint of health, it would be expected that but little attention would be devoted to the eyes. The presentation and discussion of the effects of ultra-violet rays on the eyes is limited to a few printed pages. The last portion of the book is devoted to the utilization of artificial sunlight so produced as to meet visual requirements and yet provide the so-called health-giving rays.

The book should be read by all who are interested in modern developments concerning radiant energy.

CHARLES SHEARD, PH.D.

MEMORIA DEL PRIMER CONGRESO MEXICANO DE PREVENCIÓN DE LA CEGUERA. (Transactions of the First Mexican Congress for the Prevention of Blindness.) Edición de los *Anales* de la Sociedad Mexicana de Oftalmología y Oto-laringología. Mexico City, Mexico: Talleres Graficos de la Nacion, 1930. 191 p.

A national meeting for the prevention of blindness is a noteworthy occurrence. That which convened in the City of Mexico from the first to the sixth of November, 1930, was of special importance, being the first held in Mexico and having the support and approval of the federal authorities. The president was Dr. Daniel Velez and among the honorary presidents and active participants was Dr. Rafael Silva, both distinguished ophthalmologists.

Among the participants were representatives of the Mexican Red Cross Society, the National Medical Staff, the Military School, the Institute of Biology, the Societies for the Control of Leprosy, Cancer, Tuberculosis, Alcoholism, Syphilis, Venereal Diseases and other equally important organizations. The program was most carefully arranged and the papers presented were of a high degree of merit. They included educative conferences, publications through the press, propaganda as well as practical measures for prenatal care, prophylaxis in ophthalmia neonatorum, protection of the eyes in infancy, in childhood, in adolescence and in old age with the special care necessary in the various diatheses and general affections. Advanced measures were taken in the recommendations for medical examinations before marriage, for co-operation with the employers of labor for the prevention of accidents and injuries in industry, and with the department of public education in relation to textbooks, schools, etc., with practically all modern measures relative to protective care of the eyes.

Perhaps the most unusual and interesting report was that on the existence of onchocercosis in certain of the Mexican States. The extent of this infestation involving the eyes of the inhabitants of a remote Indian village was startling. In one community of 700 inhabitants, all of them had lost their sight through infestations of these minute worms, the larvæ of which were transmitted on the proboscis of any one of three species of gnats or mosquitoes. The living wriggling filaria were demonstrated by the slit-lamp in several instances in the eyes of these poor aborigines. Curiously enough the carriers do not breed in stagnant but in clear running water. Organized efforts have been made by the Federal Department of Public Health for the control of this plague.

Representatives to the Congress were present from every state in Mexico as well as from Guatemala, Ecuador, and the United States. Among the latter was Surgeon-General Hugh S. Cumming of the United States Public Health Service who presided at the preceding session of the American Public Health Association. Dr. B. Franklin Royer and Mrs. Jessie Ross Royer, R.N., both read interesting papers. In all, fifteen delegates from the United States were present including Dr. William F. Snow representing the

National Society for the Prevention of Blindness and Dr. W. H. Luedde, the St. Louis Association for the Blind.

The *Transactions* constitute a volume of 191 pages, effectively illustrated and published as an edition of the *Anales* of the Mexican Society of Ophthalmology and Oto-rhino-laryngology.

PARK LEWIS, M.D.

HEALTH, PUBLIC AND PERSONAL. By Ralph E. Blount. New edition. New York: Allyn and Bacon, 1930. 347 p.

The material in this edition does not differ either in method or in arrangement from the 1922 edition; it has merely been brought up to date and new illustrations have been added. This brief review, then, will be of interest only to those who are not already familiar with the first edition.

The book is intended for use as a textbook in the junior and senior high school. It is based upon the experience of the author in the John Marshall High School in Chicago. Its title is somewhat misleading to those who are used to the present positive connotations of the word "health." The definition of health given is positive and inspiring, but it is not the kind of health that could be expected to result from the material which follows or from the method in which that material is presented.

The book contains a goodly amount of scientifically accurate material presented logically as fact information. It is well illustrated. At the close of each subdivision in each chapter there is a section of questions which test the student's grasp of the ideas presented, and which send him back to re-read, if he cannot answer them. There is also a "Laboratory Guide and Pupil's Notebook for the Study of Health," which provides pupil activity through laboratory material supplementary to the text. The "Laboratory Guide and Pupil's Notebook" is arranged in units of work designed to meet the needs of the progressive schools.

The material on the care of the eye is included in the chapter on "Avenues of Information." Topics discussed are: "The Structure and Action of the Eye," "Adjustment to Light," "Astigmatism," "Defects of Focus," "Disease Germs of the Eye," "Care of the Eye," "Accidents to the Eye," "Cross-eye," and "Color

Blindness." The section on "Adjustment to Light" is a welcome one. The reader wishes that more space had been given to scientific evidences supporting the five rules listed as important precautions to be observed in reading, and that less space had been given to the discussion of various diseases and defects of the eye. Self-administered tests for defects of focus are of little value, and self-medication, even to the extent of yellow oxide of mercury for granular lids, is questionable. The effect of color upon the eye, the size of type that is least fatiguing, etc., might well have been substituted.

From the point of view of conservation of vision, the book is open to criticism on two points. First, the questions at the end of each section and the explanations under the illustrations are in eight point type. This is distinctly unhygienic. A line count of the eleven pages on the care of the eye shows twenty per cent in eight point type. Secondly, fifty per cent of the 172 illustrations used are so placed that the context of the page is broken up into many short lines.

MARGARET PHELPS  
THOMAS D. WOOD, M.D.

FINDING AND TEACHING ATYPICAL CHILDREN. By Guy L. Hilleboe, Ph.D. New York: Teachers College, Columbia University, 1930. 177 p.

Since there is so great a diversity in the terminology used in referring to any type of physically or mentally handicapped child, any attempt to collect and classify information concerning any of these groups may result in statistics of questionable value.

Guy L. Hilleboe in *Finding and Teaching Atypical Children*, gives the result of a study of present day practices by the less frequently used method of personal interview. In 18 cities he secured accurate information concerning the selection, placement and follow-up of handicapped children. He also carefully reviewed pertinent books and articles published since 1920.

Teachers and administrators interested in beginning or extending work with visual deviates will find many valuable statistics readily accessible. The reasons for differentiation between classes for the blind and so-called sight-saving classes are clearly given. The

selection and diagnosis of cases for these groups is tersely stated. There is wide diversity of opinion expressed upon the advisability of high school work for the sight-saving group, but the unanimity of opinion of the great need for early guidance, job placement and follow-up of these cases emphasizes the importance of this neglected phase of educational organization.

LAURETTA F. RIESTER

AN INTRODUCTION TO APPLIED OPTICS. VOLUME I, GENERAL AND PHYSIOLOGICAL. By L. C. Martin, D.Sc., A.R.C.S., D.I.C. New York: Isaac Putnam and Sons, 1930. 324 p.

This volume was written by Dr. L. C. Martin, assistant professor in the technical optics department of the Imperial College of Science and Technology of London, England. Professor Martin says in his preface: "The teacher of light must perforce revise his syllabus! While he may curtail the time devoted to nonessential parts of 'geometrical optics' he will do well to bring the instruction as far as may be into vitally close relations with instruments, such as spectacles, telescopes and microscopes." He has carried out this plan in the preparation of this volume on general and physiological optics.

The eye and physiological optics are covered in about thirty-five pages. Aside from the elementary considerations, there are paragraphs devoted to the perception of light, the perception of form, measurements of acuity, perception of movement, peripheral vision, color vision, spatial induction and after-images. This chapter is of value to those interested in human vision.

The two most interesting and valuable chapters to the reviewer are Chapters VII and VIII (pages 226 to 310) dealing with optical glass, the production and testing of lenses and lens systems, with special reference to spectacle lenses (pages 262 to 310). The chapter on spectacles is perchance the best one in the volume.

In order to read the volume one must have an acquaintance with trigonometry and calculus. The volume is an excellent one, but is specifically intended for those who wish to have in comprehensive form the fundamental physical and mathematical developments in optics directly or indirectly applicable to vision.

LECTURE EXPERIMENTS IN OPTICS. By B. K. Johnson, F.R.M.S. New York: Longmans, Green and Company, 1930. 112 p.

This brochure contains information of much value to those who are interested in giving lecture demonstrations of the fundamental phenomena of light such as reflection, refraction, lenses, mirrors, photometry, the spectrum and color, polarization, interference and diffraction. The volume might well be termed a notebook containing details regarding the experimental set-ups and the apparatus needed.

CHARLES SHEARD, PH.D.

### Briefer Comment

ELEVENTH ANNUAL REPORT OF THE INDUSTRIAL HEALTH RESEARCH BOARD. Medical Research Council. London: His Majesty's Stationery Office, 1931. 85 p.

In the report of the Industrial Health Research Board which covers activities for the year as well as an analysis of work published from 1926-1930, the effect of the eyes and lighting upon the health and efficiency of workers is not overlooked. A study of the effect of lighting systems upon the work of compositors shows that more accurate work is done under indirect lighting. Good daylight illumination showed an improvement over the best artificial lighting. The need of glasses in close work, even for those of normal vision, was demonstrated in a study of the output of hosiery linkers. In an effort to lessen the amount of miners' nystagmus, the efficiency of miners' lamps was measured and standards determined. An investigation, not yet completed, studies the effect of different levels of illumination upon the efficiency of workers in "rough" occupations.

CORPORATION CONTRIBUTIONS TO ORGANIZED WELFARE SERVICES. Pierce Williams and Frederick E. Croxton. New York: National Bureau of Economic Research, Inc., 1930. 347 p.

A research and an analysis of the share which corporations have assumed in community welfare work, of particular interest to financial secretaries and community chest treasurers.

PHYSIQUE AND INTELLECT. Donald G. Paterson. New York: Century Company, 1930. 304 p.

The author divides his book into eight chapters, containing such subjects as, "Height and Weight in Relation to Intellect," "Cranial Measurements and Intelligence," "Anatomical Age and Mental Age," "Morphological Index, Height-Weight Ratio, and Intelligence," "Physical Condition and Mental Efficiency," and "Physique and Temperament." We are particularly interested in the chapter dealing with "Physical Conditions and Mental Efficiency," which includes in its discussion a very brief allusion to the relation of defective vision to mentality and quotes from findings appearing in "Laggards in our Schools," that among the dull, 24 per cent have defective vision; among the normal, 25 per cent have defective vision; and among the bright, 29 per cent have defective vision—directly opposite ratios to what occurs in any other physical defect.

THE RELIABILITY OF SOME SILENT READING TESTS. T. G. Foran and Robert T. Rock, Jr. Vol. V, No. 6, Educational Research Bulletins, The Catholic University of America, Washington, D. C.: The Catholic Education Press, 1930. 23 p.

An analysis and evaluation of some of the more widely known silent reading tests; the authors find the Stanford test the only one whose scores can be used with safety on the individual attainment, while the Gates test for group work takes a place above the average.

THE VISUAL PERCEPTION OF DISTANCE IN YOUNG CHILDREN AND ADULTS: A COMPARATIVE STUDY. Ruth Uppdegraff, Ph.D. Vol. IV, No. 4, Studies in Child Welfare. Iowa City: The University of Iowa, 1930. 102 p.

A study of the perception of distance in preschool children showed an understanding among children of distance, comparable to that of the adults tested. This research, although limited in value because of the small number upon which conclusions are based, is interesting in opening a new field and demonstrating the practicability of objectively testing the perceptive powers of young children.

---

THE EFFECT OF EYESTRAIN ON THE OUTPUT OF LINKERS IN THE HOSIERY INDUSTRY. H. C. Weston and S. Adams, Industrial Research Board of the Medical Research Council. London: His Majesty's Stationery Office, 1927. 20 p.

The nature of hosiery linkers' work demands a high degree of accommodation and convergence, tending to produce strabismus and eyestrain. Optimum illumination and adequate correction of refraction removed eyestrain and increased the speed of work. It is recommended in the conclusion of the report that in all industries where the eyes of workers are subjected to prolonged strain, correcting lenses be supplied the workers to minimize strain and visual fatigue.

ALL ABOUT THE BABY. Belle Wood-Comstock, M.D. Mountain View, California: Pacific Press Publishing Company, 1931. 364 p.

A library on the baby from before birth through the preschool years, compressed into one volume. While the material, especially on the physical care of mother and baby is sound, the presentation is inclined to be sentimental and flowery.

## Contributors to This Issue

**Dr. Park Lewis**, a practicing ophthalmologist in Buffalo, N. Y., and fellow of the American College of Surgeons, has been one of the motivating forces in the National Society for the Prevention of Blindness since its inception as a state committee in 1908. Dr. Lewis is a vice-president of the International Association for the Prevention of Blindness as well as of the National Society.

---

A public health nurse in Birmingham, Alabama, **Miss Zoe La-Forge**, R.N., has had wide experience in sight conservation work, in both urban and rural communities.

---

**Mr. Lewis H. Carris** is managing director of the National Society.

---

**Miss Grace S. Harper**, who writes of the work of the Prevention of Blindness Department of the New York State Commission for the Blind, is executive secretary for that organization; in her work she draws upon a background rich in social and medical-social experience.

---

**Dr. Thomas Hayes Curtin** of New York is a practicing ophthalmologist and is on the staff of the Bronx Eye and Ear Hospital.

---

Nationally known for her work in organizing, advising and inspiring sight-saving classes, **Mrs. Winifred Hathaway**, associate director of the National Society, has been especially interested in illumination in the classroom and in the home.

---

Among the Book Reviewers: **Miss Margaret Phelps**, assistant to **Dr. Thomas D. Wood** at Teachers College, Columbia University, has collaborated with him in this review. **Dr. Charles Sheard** is connected with the Mayo Clinic, Rochester, Minn., in the section of physics and biophysical research. **Miss Lauretta F. Riester** is director of the Extension Department, City Board of Education, Buffalo, N. Y.

# The Social Aspect of the Movement for the Prevention of Blindness: A History\*

Edward M. Van Cleve

**T**HE organized effort to conserve vision has attracted not only physicians and social workers, but teachers, editors, business men, labor leaders, engineers, and people in virtually every other walk of life

ON THE six occasions of the bestowal of the Leslie Dana Medal, it has been awarded heretofore in every case save one, to an eminent physician, and with acknowledged propriety. The subjects of the addresses made by these recipients have had a distinctly technical character, I doubt not. Therefore, it seemed best on this occasion to choose for our consideration a theme quite remote from the professional for the sake of variety on the one hand, and because of the incapacity of the speaker, on the other hand, to deal properly with technological aspects of our common interest. I call your attention then to the social aspect of the movement for the prevention of blindness.

And because the word "social" connotes people, this address will occupy itself with some personalities rather than with the progress of our movement in general. We have a phrase, social service, whose sense has acquired something of triteness through too frequent application, and for that reason I am somewhat loath to apply it to this work in which we are engaged. Yet in the best use of this lately invented term, the prevention of blindness ranks high as social service, for it is a Cause (written with a capital C) serving the people in a remarkably extended even if restricted sense. Every state in our Union has some vital connection with

\*Address given upon award of the Leslie Dana Medal, presented at the Missouri School for the Blind, November 20, 1931, under the auspices of the St. Louis Society for the Blind and the Jacob Lampert Lecture Fund.

our National Society for the Prevention of Blindness, and more than 30 foreign countries as well. And the chief character in any historical review of the movement must always be recognized to be that long-time servitor of society, Louisa Lee Schuyler. Her social service began when as a young woman, emerging from her teens, she became a forerunner of the Red Cross through her active participation in the work of the United States Sanitary Commission near the close of the Civil War. Then came the founding of New York State Charities Aid Association and the establishment of the Bellevue Hospital School for Nurses. That she later became interested in preventing needless blindness was a stroke of fortune to us of which I shall speak later.

It is not my purpose to attempt at this time a detailed historical sketch of this movement; that indomitable and energetic collaborator of ours, Dr. Park Lewis, has urged me again and again to write the story of its beginnings and progress, since *quorum pars magna fui* (I think I may use such words in the same fashion as did Aeneas and with as little intentional egotism); I wish to speak of the people who had part in those beginnings, yet in dealing with these persons whom I shall delight to name and characterize in brief, I shall use that best method of knowing history—consideration of the men and women who have made the cause of prevention of blindness known and effective in these twenty-five years or so of its progress. Here I must be pardoned for some account of personal experiences quite unavoidable; so greatly has the movement developed from the time of those early efforts which are to be here recalled that one might be excused for indulging in reminiscences as of events long past; perhaps in another quarter century, as a really old man, I may tell the St. Louis workers in that day some stories of the times of their fathers, if the chance is given me.

All social developments have, I believe, begun in the concept and the devotion of some person. A single illustration will suffice: Adoniram Judson is preeminently typical of the 19th century exponent of missionary enterprise. Zeal for a cause, however, needed a sort of collateral to bolster its strength and to give it currency in the market. The story of his life shows how he obtained that needed social and political support. With Judson, as with many another, the missionary spirit must enlist co-operation of those not

initially interested, and many a wise missionary has developed statesmanship of a marked and lofty character. The ability to enlist able and powerful lieutenants in any cause is indispensable to its success. I am accustomed to think of Dr. Lucien Howe as a missionary in the field of medical enlightenment. In the '90's he secured legal enactments, first in New York State and then through arousing his fellow ophthalmologists, in other states, providing for the use of prophylaxis at the birth of babies. And these laws were mostly dead letters. When in 1908 I learned of the existence of such a law on the statute books of Ohio, put there in 1892 under the inspiration of the Howe Law of New York, I was told by certain ophthalmologists that it never had been taken seriously by the profession, that it was not meant to be enforced, that its purpose was merely educational. Being only a layman, an administrator, accustomed all my life first to obey the law and then to put some laws into effect, I was struck with the fact that this was something worse than futile, and a condition to be remedied. That was in Ohio and already in Massachusetts had begun that social service movement which was the forerunner of others, the establishment through the activities of a company of workers in the interests of the sightless of a State Commission for the Blind. Those Yankees had set themselves a four-limbed task, one of whose arms was prevention of blindness. Their cue was taken by the group of Ohioans who saw the chance to do service in such a field and who copied in large part the Massachusetts law, making prevention of blindness one of their chief aims. Thus the chairman of the Ohio Commission found himself face to face with that rather futile attitude of the medical profession toward the ophthalmia neonatorum law on the Ohio statute books, but empowered with his fellow commissioners to *secure* prevention of blindness.

Howe and his successors, notably Park Lewis, needed lay support. They secured it through the State Commissions, and of the New York Commission Dr. Lewis was a most active member. To the commanding influence of this statesman among physicians, this many-sided scholar in the school of humanity, this publicist of his profession, we owe the awakening of the interest of Louisa Lee Schuyler.

One day there came in the mail to Miss Schuyler's Madison

Avenue apartment a rather bulky piece of printed matter. It was the volume issued by the State of New York embodying the report of the Commission of 1906 to Investigate the Condition of the Blind in the State of New York. The compilation of this notable book was chiefly the work of the Commission's secretary, that well known laborer in the field of helpfulness to the blind, Olin H. Burritt, then superintendent of the state school at Batavia, the chairman and chief inspiration of the Commission being Dr. Lewis. Most people would put aside or wholly disregard such a report with its voluminous statistics, the usual long-winded remarks, its comments and recommendations; but not so this devoted public-spirited woman. She opened the volume and by chance saw first a picture of a group of blind children entitled, "Five Victims of Ophthalmia Neonatorum," and below the title she read: "Proper care at the proper time would have saved their sight." She says she was thunderstruck. She had never known anything much about the blind; with the fact that the calamity of blindness occurred to people, she was acquainted, of course, but that it might have been prevented in many cases, and was not, filled her soul with horror. Immediately she wrote to Dr. Lewis at Buffalo to ask him to call on her when he was next in New York City that she might consult with him concerning means to correct so unbelievable a situation. Dr. Lewis at once telegraphed that he would take the train and call upon Miss Schuyler the following day. The interview was held. The question put, "Is it true that children are going blind needlessly?" When the distinguished physician assured her that it was sadly enough true, there broke from her lips a vehement, "It MUST not be!" With characteristic energy Miss Schuyler proceeded to call together at luncheon a group of interested persons: Dr. Lewis, Miss Holt, Mr. John M. Glenn, Dr. J. Clifton Edgar, the noted gynecologist, and then and there was begun the drive against needless blindness. When she asked these advisers how much it would cost to get started and was told that \$3,000 a year might be necessary, she exclaimed, "We shall have it—we shall have more; let us have \$5,000."

The Russell Sage Foundation had begun its operations in 1907 and Miss Schuyler was one of its trustees. With the approval of

all the trustees and the director an appropriation of \$5,000 a year was made to inaugurate a campaign to accomplish prevention of such blindness as might be prevented. That brilliant woman, notable opportunist in the best sense of the word, Miss Winifred Holt, seized the occasion to join forces with Miss Schuyler and use the lately established New York Association for the Blind's Committee on Prevention of Blindness to set the movement before her public. What a way she had, Miss Holt, to command attention and inspire assistance! How she turned the half-convinced women and men of wealth and influence, keenly desirous of doing good, into contributors to her cause and then into whole-hearted supporters! A real cause of justified pride she has esteemed it that the Committee of her Association on Prevention of Blindness has done so much for this movement. To carry on money was needed and Miss Schuyler was quite able to secure the appropriation of money she had promised and the warm support of her fellow trustees of the Russell Sage Foundation as well as the intelligent interest and wise guidance of the Foundation's director, John M. Glenn.

Those years from 1905 to 1910 were a time of awakening in our movement. Down in Kentucky a devoted woman whose interest in the mountaineers had called her into a peculiarly intimate relationship with doctors and teachers as she tried through her Mountain Fund to help these needy people, Miss Linda Neville, had established her own Kentucky Society for Preventing Blindness and had joined with her fellow townsman, Dr. J. A. Stucky, of Lexington in organizing, managing, conducting eye clinics up the creek valleys to the remote settlements and persuading those who must have hospital care to come to the Lexington Hospital for treatment. In every roster of workers for prevention of blindness the names of that great hearted physician and his undaunted coadjutor must stand high.

In Massachusetts Edward E. Allen, lifelong laborer in the field of service to the blind and Annette P. Rogers, cultured sightless woman, were members of the Commission for the Blind, the first publicly appointed group to begin this work; its chairman was a man who gave largely of his fine business ability to its affairs and was deeply concerned along with his fellow commissioners over the

cause of preventing blindness; James P. Munroe was the philanthropist and business man, the scholar and administrator, servant of his own state, in war-time and after a chief-of-bureau in the federal government, a wise friend of our cause.

Maryland had a society for prevention of blindness, chiefly the expression of Dr. Hiram Woods' desire to gain the support of the people of Baltimore in staying the ravages of infantile blindness. Dr. Woods, genial, happy-spirited, friendly, beloved! A distinguished ophthalmologist, a man of great influence.

I wish I had in hand the letter received back in 1909, written in Miss Schuyler's old-fashioned script, asking if the time were not ripe for a national conference and a possible organization of the forces. We in Ohio had groped our way toward a process of promulgating our gospel—the good news that blindness is not necessarily nor usually an act of God. We had called on others for advice and suggestion and the New York State Committee, whose executive, Miss Carolyn Conant Van Blarcom, brilliant, capable, resourceful, had with a basis of nursing knowledge undertaken the making of a layman's first-aid kit of information, was the chief source of supply and inspiration. My judgment, and that of others approached on the subject, was favorable to an assembly of interested workers. They came together—those named above and a considerable number more—with the Russell Sage Foundation Committee as convener. A *News Letter* was published shortly after by the Committee of the Foundation to which we all contributed a report of the work in our several communities. Then another conference was held, December 17, 1910, more largely attended, and out of it came the plan for a national society. Munroe, Woods and I were the committee to formulate a tentative scheme and after a brief delay for whipping an organization into shape, the American Association for the Conservation of Vision was established March 23, 1911, with a board of directors and a staff to begin work. This board numbered ten, including the three above named with Dr. Lewis president, with also an engineer, an expert in lighting and a labor leader. As a member of this board, too, Dr. Jacob A. Shawan, superintendent of the public schools of Columbus, Ohio, a nationally known educator, was chosen. Staunch, stalwart, great-souled friend of our cause—he was able to do for

it less than he proposed because of family and personal illness; but he should never be forgotten as one of the early props of a staggering structure. For the brilliant beginning of the American Association for the Conservation of Vision was soon seen to be fading as the mirage of promised financial support failed to become actual. But the spring of 1911 gave opportunity to make a great start in the field of publicity and the Association's staff prepared under high pressure an admirable contribution to a great meeting held in the Metropolitan Opera House in New York City. But the bills for this came to a treasurer who had no funds and there was a debt which hung over us for some time. One remembers the worries of those days and the gropings for a way out with some regret that we had so little prescience and perhaps too much willingness to nurse the counsels of hope. Some of the board of directors asked to withdraw but they would not do so without honorably proposing to liquidate the indebtedness. And it was done, the group of us pooling our obligations and sharing in the payment—Dr. Lewis, who insisted on taking two shares of the indebtedness, Dr. Shawan and I stayed on, the others retiring; we three hoped we could find money with which to re-engage a secretary and push on.

But why renew too particularly the agonies of these years of hope and disappointment? It was a struggle to get the infant through those beginnings. One incident of hopeful nature relieved a constant gloom. I wrote personal letters of appeal to friends, explaining the need of such a movement and the hopefulness of success of such an organization as ours. Only a few small checks came as a response at first; one day, Mrs. Ella St. Clair, a woman of means, herself a shut-in, good friend of years before in our Greenville, Ohio, home, sent in a check for \$200 with the intimation that so long as I was actively engaged in the work she would make an annual contribution. Here was light in darkness! That money did something more than furnish and breed a little additional resource—it gave hope and encouragement to go on.

Another incident that belongs to this story of beginnings: Our triumvirate of never-say-dies assembled in Buffalo on occasion of a great educational meeting there and had the pleasure of meeting at luncheon, at his suggestion, Mr. Jerome D. Greene, executive director of the Rockefeller Foundation. It was a good luncheon, I

presume, set before us at Dr. Lewis's Club. I was too excited to know what I was eating. For, after we had concluded the gustatory part of our assembling, it was our privilege and purpose to set before this representative of generous contributing to worthy causes, Mr. Greene, our claim to recognition as a group of earnest workers in the field of public health, the field which the Rockefeller Foundation had chosen for its service. It was an enthusiastic and almost an agonized appeal that went into his ears. It turned out to be not unfruitful, though for some months it seemed otherwise.

It was good fortune that a young man of great force and character, Mr. Raynal C. Bolling, legal representative of the United States Steel Corporation and member of its Committee on Prevention of Injury by Accident, had been added to our board of directors. He saw the worth-whileness of such an organization as ours and he was able through his associations to make the cause appear a worthy one. In him Mr. Greene had confidence and both Mr. Bolling and Mr. Glenn of the Russell Sage Foundation had given the Association virility through their approval and their personal adherence. Imagine the joy which came with the announcement in May, 1914, that the Rockefeller Foundation had appropriated \$25,000, distributed over five years, for the carrying on of this work! The gift was conditioned on a budget of \$15,000 a year being provided. This was assured for the first year by the generous contribution of \$5,000 by the Russell Sage Foundation additional to the \$5,000 made for some years to the New York State Committee and to be continued to a merger of that Committee and the American Association for the Conservation of Vision.

So the National Committee for the Prevention of Blindness was born, that high sounding but less appealing "Conservation of Vision" title being dropped, and on January 1, 1915, began its career. I wish I were able to pay proper tribute to one of the chief sponsors of its beginning, John M. Glenn, faithfulest friend, wisest counsellor, unfailing optimist. Were it not for his persistence in hope and the encouragement of his manner and words the Society, now one of the most staunchly established and generously supported national organizations, would have been long delayed in its beginning and might, indeed, have failed of birth. And what a happiness to have known and associated with Major Raynal C.

Bolling, first great sacrifice of our aviation staff in the World War, man of character and high breeding, swift in decision, commanding in presence and in speech, a Chevalier de Bayard.

Elsewhere than in Massachusetts, pioneer of the movement, in Ohio, Kentucky, Maryland and New York, interest had sprung up spontaneously, or, perhaps, induced by reports of some of the activities above reviewed; this interest was especially notable in in St. Louis where in 1911 the work of the Missouri Association for the Blind, now the St. Louis Society for the Blind began. The genius and the personality of Miss Carol Bates, in her effective inauguration of this service to the blind, was recognized and is remembered not only here in St. Louis but as far away at least as New York. With the generous support of Col. Butler and the co-operation of others her work of social helpfulness bore fruit in various ways. Like other similar organizations the St. Louis Society chose to lend its aid to preventing blindness and that phase of its service continues as one of great importance. The first board of directors included some whom I came to know well, the Greens, Dr. John Jr., whose name mentioned in ophthalmological circles as friend to our cause always commanded a hearing for us, and S. M. Green, the representative in St. Louis known throughout the United States for every good thing that concerns the blind or cognate interests, Dr. Thomas J. Riley, who recently died in Brooklyn after an all-too-short life of brilliant service to humanity both here and in the metropolis, widely known and respected in his special field, Mr. James C. Jones, whose appreciated interest in matters concerning the sightless led us who were officially concerned to look his way when the American Foundation for the Blind was established with the hope that he might join its first official group, and with them besides Miss Bates, Mrs. Curtis, Mrs. Pelton, Miss Sloan, Dr. Lock and Mr. Knox. While this Society's aims were first to give employment to the blind and promote their social welfare a third aim of no less prominence was set forth—to prevent blindness. Into this work, with a heart of gold and a geniality that has made her beloved in all circles where she moved came Mrs. Anna F. Harris. The sixteen years she gave to this work made her not only a well known figure in this city but gave her a place of importance in national gatherings. And

I doubt not that the generous and intelligent service rendered by this St. Louis Society throughout the twenty years since 1911 continues with the approving support of Mr. Jones, now the honorary president, and with the direction of Mr. Johnston, the new active president, and his associates, Messrs. Carter, Dana, Lang, McBride, Barnes, Cummings, Hardesty and Green, and the management of Mrs. Lyle and her assistants. In this city, this Society under whose auspices we meet tonight, is a recognized power for good with its sevenfold program of usefulness.

In far away Utah and then in San Francisco a woman of generous impulses had similarly set up societies for promoting the cause of prevention of blindness and helping those who had become blind. This was Mrs. Andrew S. Rowan. She had married the man who carried the message to Garcia, young Lieutenant Rowan, and as an officer's wife she had gone to the Philippines and to Salt Lake City and then in his retirement to San Francisco. Here she and Col. Rowan now reside. Her enthusiasm drew to the cause adherence of society women and professional men and interest of great value was aroused in the cause of prevention.

And so, not only in the east, the center, the far west, in New Orleans, in Chicago, in the northwest, there were women and men who were stirred with that sense of a desire to help humanity out of which has grown this great cause of ours.

Let us now go back to that reference I made to the statement of some Ohio physicians concerning the Ophthalmia Neonatorum Law of 1892, to the effect that no hope of its enforcement was ever entertained. They may have felt their pessimism justified by experience of previous efforts in legislation for social betterment, yet it is a fine evidence of the hopefulness of the doctors who secured the enactment of the law when they offered it as an educational measure. To educate whom? one may ask. The rank and file of the medical profession, in fact. One day a group of eminent Ohio oculists met in my office by invitation and were requested to offer us suggestions as to how best we might promote the elimination of babies' sore eyes. An answer came swiftly and with some very strong expletives to the effect that we might begin with the medical schools. As, in the illustration used, Judson the missionary with all the will in the world and all the

backing of his own profession could not effect his great service without co-operative interest on the part of others indifferent or ignorant as to his main purpose, so these ophthalmologists needed some means other than any they had yet tried to secure the end they had in view, the reduction of infantile ophthalmia. One admires these physicians the better he knows them, earnestly striving to prevent at the very source the making of patients. What was suggested, that education begin with the medical schools, of course was out of the sphere of mere laymen, but it is interesting to relate that now, less than a quarter of a century later, the routine use of prophylaxis in hospitals is the rule whereas then it was, so we were told, the exception. What brought about the attention given in medical schools and everywhere may have been, as I think it was, the combined influence of these specialists and the laymen who had found it their task and their satisfaction to noise abroad the facts that should impress profession and public, too. It is interesting to recall how sometimes the propaganda bore evidence of success. One day in a plumbing salesroom in Columbus, Ohio, I was buying a valve attachment or something and ordered it sent to the School for the Blind. The salesman, learning that I was connected with blindness, said: "Say, did you ever hear about babies going blind because they didn't use drops when they were born? I saw an article in the paper about it, and, you bet, I made the doctor use 'em in *my* baby's eyes when he was born last week." The author of the newspaper publicity was pleased to note its effectiveness, though he refrained from announcing his responsibility for the article. But that the law itself was a dead letter and, indeed, incapable of enforcement remained the opinion of many, even as distinguished a partisan as Dr. Bruner of Cleveland. He told me that a certain legal adviser had assured him that the law had so many holes in it that it was not worth while to shoot any in. It remained for a certain Cleveland woman to prove the gentlemen incorrect in their judgment, for Marion Campbell, dogged and persevering, unwilling to leave any stone unturned in the effort to carry out her purpose of making it dangerous to neglect babies' eyes, brought case after case to trial with conviction of the careless attendant, under this very same law, intended only as educational and reputedly as full of holes as a Swiss cheese. To this devoted woman,

Miss Campbell, Ohio, New York, Illinois all owe a debt of respect and appreciation for faithful and effective service in prevention of blindness.

Perhaps it has been made clear in these remarks, partly historical and reminiscential, partly a portrayal of contributory personalities to the accomplishment of a set purpose—to make known the facts and stir the intent to overcome the needless waste of blindness that can be prevented—that this movement, at first essentially a medical men's movement, has become the more successful because into professionalism has been inducted the social element. A cause becomes a reform and grows to the status of a commonplace mode of living when the professional proponents are joined by those outside the immediate circle who give their interest and effort to promulgate the facts and thus gain the hearing and the acceptance of all intelligent people. In this process we see enlisted the interest of a great educator, a David Starr Jordan, who gave his adherence to this cause in its early stages; a noted public man, a William Howard Taft who gave his name as honorary president to the National Society; a successful business man, a Leslie Dana who conceives the cause sufficiently important to induce him to provide for the medal whose annual bestowal calls attention to the work done through certain public acclaim; an editor and publicist, a John H. Finley, of the *New York Times*, whose words spoken and written have accentuated the importance of the movement again and again; a distinguished and world famous minister, a Rabbi Stephen S. Wise, who can find no field of humanitarian effort more worthy of his sympathy; a lawyer and diplomat, a Joseph H. Choate, whose deep humanitarianism led him to make common cause with us. A catalogue of names of the good and great might be in this connection lengthened to tediousness. Suffice it to say that in every walk of life the men and women who have thought well of this cause are legion, the distinguished and the less widely known, and the great common people. It is when the sympathy and interest of society in general are aroused that a movement such as is ours may be said to have reached its apotheosis.

And it is in a spirit of true gratitude and satisfaction that the national prevention of blindness movement, now almost seventeen

years old as a going concern and nearly twenty-five years old as a joint physicians' and laymen's enterprise, has claimed the approval of many men distinguished in the profession of ophthalmology, such men as Drs. Glaser of San Francisco; Würdemann of Seattle; Luedde, the Post brothers and Howard of St. Louis (besides Dr. John Green already named); Bruns of New Orleans; Jackson of Denver; Wilder and Brown of Chicago; de Schweinitz, Holloway and Posey of Philadelphia; Blair of Pittsburgh; Gifford of Omaha; Stucky of Lexington; Wilmer of Baltimore; Derby of Boston; Bruner of Cleveland; and Alger, Berens, Cutler of New York;—to mention only a few and these all men whose affiliations with our enterprise came in the days of my managing directorship. Since my retirement from the chief responsibility, a host of others, particularly younger men, have given their countenance and active support to it. I believe I am justified in saying that the ophthalmological profession generally has endorsed the work of the National Society both individually and collectively.

Born in an effort to enforce the saving of babies from needless blindness, this movement has become broader in scope and more comprehensive in plan as the years have gone by. It is remarkable what sorts of people have become interested in its work and worth. An analysis of the list of 25,000 financial supporters of the National Society will show people in every walk of life giving this sort of allegiance to the cause. And it is because the social appeal of help to humanity is heard more distinctly and in more widely distributed regions that we dare hope it is to become a universally recognized cause.

Men of business, women of social prestige, professional leaders of human kind, engineers and manufacturers, teachers and preachers, writers and editors, artists and leaders of labor, presidents of colleges and universities and leaders in public life—presidents, senators, governors—in short, men and women of light and leading everywhere have made common cause with physicians and social workers in an ever increasing development of this movement which we here celebrate. Says the editor of a great metropolitan daily: "The survey of the various aspects of this modern 'holy war' should open the eyes of the many who can see, giving them a view of one of the most beneficial and nobly

humanitarian undertakings which have ever actuated a group of human beings."

To have had any part in such a meritorious service rightly warms the heart and stirs a pardonable pride. Let us as intelligent and generous members of human society give to such an undertaking always our best thought and our warmest support.

# Vision Defects and Their Correction \*

Willis S. Knighton, M. D.

**T**HE nearsighted child must not be permitted to do close eye work. For those with progressive myopia, the simple out-of-door life is recommended; a general toning up of the whole system is the best insurance for the high myope

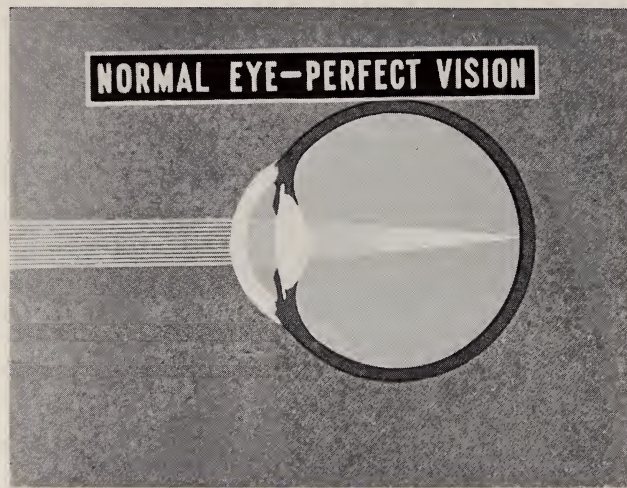
**T**HE eye is a very complicated optical instrument, but for practical purposes it may be considered a condensing lens which converges the rays of light that pass into it and focuses them upon the retina. The various parts which are concerned in this process are: the cornea, the aqueous, the crystalline lens with its anterior and posterior surfaces, and the vitreous. Behind this we find the retina, which receives the visual impressions, and the choroid, which supplies the nutrition. The sclera is the main supporting coat of the eyeball and is seen in the front as the "white of the eye." It is covered in turn by the conjunctiva.

## What is Refraction?

The process of bending the incoming rays of light so that they fall on the retina and give a clear visual image, is called refraction. In the ideal, or emmetropic, eye rays of light from a distant object are perfectly focused upon the retina when the eye is completely relaxed. But in the majority of cases this ideal condition does not exist, and in a narrower sense, refraction is usually spoken of as the correction, by means of glasses, of these deviations from the ideal. The principle of refraction will be explained under the consideration of the three main deviations from emmetropia: hyperopia, myopia and astigmatism.

\* Presented during the series of study meetings on Medical Social Service in Eye Clinics arranged by the Committee on Development of Social Service in Eye Clinics of the Medical Social Service Section of the Welfare Council of New York City.

The emmetropic eye can see clearly in the distance when the eye is completely relaxed, but what happens when the gaze is shifted to a nearby object? If the eye remained relaxed the incoming rays would fall behind the retina and a blurred image would result. This is where accommodation plays its part. Accommodation is the act of focusing so that incoming rays fall on the retina. It is accomplished by the involuntary action of the ciliary muscle which surrounds the crystalline lens. When this muscle contracts, it permits the lens to become rounder and stronger in its converg-



Normal Eye—rays focus correctly on retina

ing power and thus shortens the focus of the incoming rays so that they fall on the retina and give a clear image. The act of accommodation performs only this one function, i. e., shortening the focus of incoming rays. It cannot lengthen the focus any more than is natural for each eye when the accommodation is relaxed.

Man's eye at birth is short in length and the lens is well rounded, but as growth proceeds, the eyeball lengthens out and the lens becomes flattened. These two processes take place simultaneously so that a proper relationship between the refractive power of the lens and the length of the eyeball is maintained. Very often, however, the lengthening of the eyeball fails to keep pace with the flattening of the lens and as a result we have the focus of the in-

coming rays falling behind the retina, because the retina falls short of its normal position. This is called hyperopia, or farsightedness. On the other hand, the lengthening of the eyeball may go on beyond its normal development and the focus of distant objects will fall short of the retina because the retina has gone beyond its normal position. This occurs in myopia or nearsightedness.

### **Farsightedness**

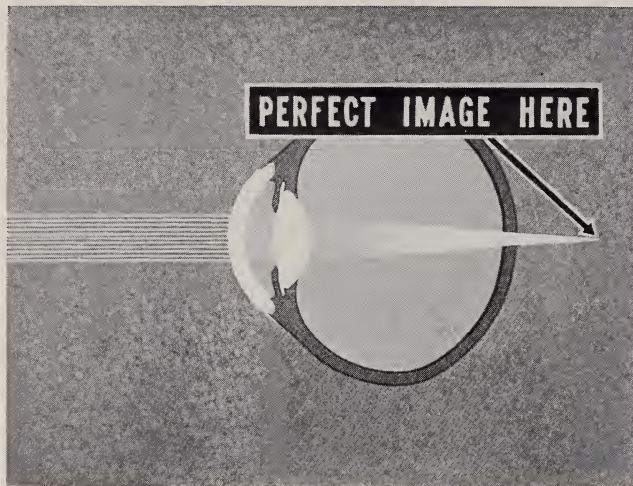
Hyperopia means "beyond the eye." When the hyperopic eye is relaxed and looks at distant objects, the focus of the incoming rays does not fall on the retina, but behind it, thus giving a blurred image. But we have seen that when such a condition occurs, accommodation comes into play and brings the focus up to the retina, and this is exactly what happens in the hyperopic eye. Because the hyperope always gets a blurred image for distant vision when his accommodation is relaxed, he is always using a small part of it; the amount of accommodation required depending upon the amount of hyperopia. It is this constant use of the accommodation which gives rise to the symptoms in hyperopia.

If the hyperopia is small, the constant accommodation is small and there may be no symptoms. But as the hyperopia increases there is a greater demand upon accommodation and because of this, the patient feels tired towards the end of the day. Close work is especially bothersome, because in addition to the constant drain upon the accommodation for distant vision, there is an extra demand upon it for close work. The accommodation is already somewhat tired because of its continuous use for distant vision and when the extra amount is required for close work, the symptoms of fatigue set in. The indefinite term "eyestrain" is used to explain these symptoms of accommodation fatigue and embraces all the symptoms from a slight tired feeling at the end of the day to terrific headache and reflex nervous disturbances.

The boy at school may be listless and inattentive because application to his books requires too much effort of accommodation. He finds it much easier to look out of the window and far, far away where there is less demand upon the accommodation. With a higher degree of hyperopia he may find that after a certain amount of close work he has a slight headache. With still greater hyperopia

there is actual blurring of vision for close work and more headache, and as the hyperopia increases, so do the symptoms develop into irritated eyes, sensitiveness to light, pain behind the eyes, occasional blurring of distant vision (especially when the patient is tired), dizziness, nausea, occasional double vision, reflex nervous disturbances, and perhaps muscle imbalance.

In the very high degrees of hyperopia, the accommodation is sometimes inadequate to bring the focus up to the retina, in which case the patient gives up accommodating, thereby suffering none



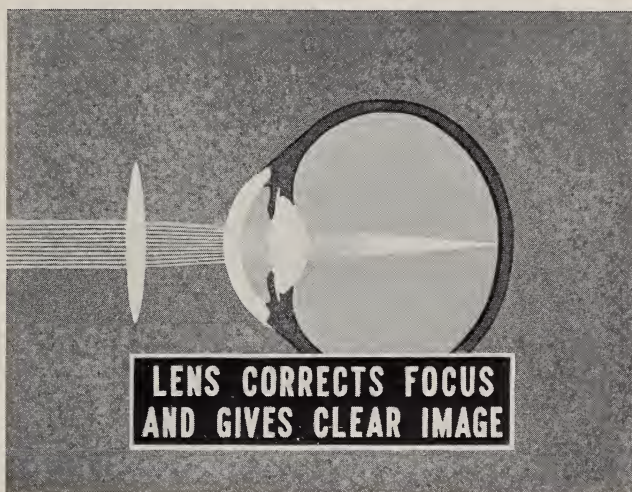
Farsighted eye—blurred vision

of the symptoms of accommodation fatigue, but instead, enjoying poor vision. Indeed, the vision is so poor in these cases that it is necessary to bring the work very close to the eyes in order to get a larger image on the retina in order to interpret it at all. These patients may appear to be nearsighted but a refractive examination will immediately disclose their excessive hyperopia.

The principle of correction of hyperopia is simply to replace accommodation by a converging lens to be worn in front of the eye. Accommodation is effected by making the crystalline lens more powerful, more converging. If a converging lens is placed before the eye, the incoming rays will be partly bent as they enter the eye and there will be less work for the accommodation to do.

The proper proportion between the correcting lens and the amount of work that the accommodation is left to do is a matter which the oculist has to consider for each individual patient. In small amounts of hyperopia, he may prescribe a rest glass, i. e., a glass to be worn to relieve accommodation just during close work. Larger errors will require that the glass be worn all the time.

The prognosis in hyperopia is good as regards the vision. The blurring of vision will cease as soon as the accommodation is relieved by glasses. Without glasses it will recur as soon as the strain



Farsighted eye corrected by converging lens—clear vision

upon accommodation reaches a certain point. Continued use of the eyes without correction will seldom impair the vision permanently, but the symptoms of strain, if unrelieved, may make a nervous wreck of the patient. Fortunately the symptoms respond like magic to the relief of accommodation. Hyperopia does tend to decrease slightly as the patient grows older, but the change is so small that the promise of eventually going without glasses should not be held out to the patient.

The family and the patient are prone to believe that as long as the vision is normal there is no need for correcting glasses, but we have seen that this normal vision is obtained at the expense of an abused accommodation. They should be made to understand that

the glasses are prescribed not so much to improve the vision, as to relieve the eye of too much effort in seeing. It is not necessary to wear glasses for hyperopia all the time. Theoretically it is better to do so, and give the accommodation a maximum of rest, but practically the patient is well served if he will wear his glasses whenever he is doing any close work or whenever there is any suggestion of fatigue.

### **Nearsightedness**

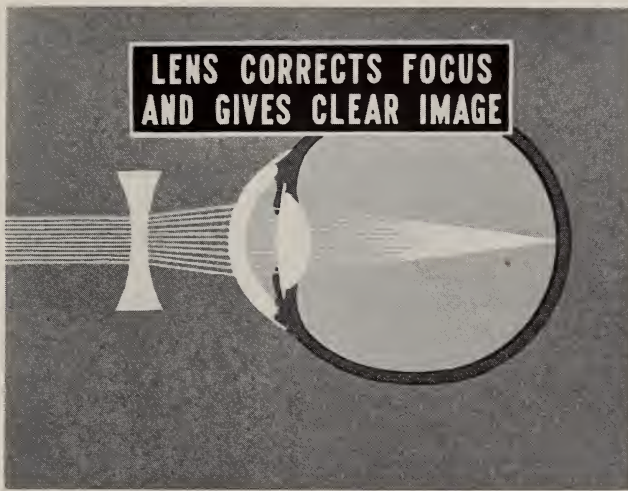
Myopia is another story. It is essentially a disease process in which the supporting coats of the eye lack the normal resistance and allow the length of the eyeball to go beyond its normal limits. The focus of the incoming rays is thus in front of the retina and distant vision is blurred. It is only when the object is brought closer to the eye that rays from it are focused upon the retina, and the higher the myopia, the nearer the object must be to be seen distinctly. The myope never uses his accommodation for distance because the incoming rays are already focused in front of the retina and accommodation can only make the focus shorter, not longer. Consequently, the myope does not suffer any of the symptoms of accommodation fatigue. He complains first of poor distant vision, but his near vision is perfect.

In the milder forms of myopia there may be a rather slowly progressing increase in the length of the globe which causes progressively poorer distant vision and perhaps a few spots before the eyes. Eventually the increase slows down or stops altogether and the patient is able to enjoy good vision with the aid of glasses.

In the malignant form of myopia, the lengthening of the eyeball keeps on increasing apparently uninfluenced by any form of treatment. The increasing size of the globe often makes it difficult for the patient to turn the eyes in, as in the act of reading. When the effort becomes too great, single binocular vision is given up, the image is suppressed in one eye and that eye is allowed to swing out. The retina becomes stretched and torn by the elongating process and hemorrhages may appear throughout the retina and choroid. The retina often becomes detached. The vitreous is pulled away and becomes fluid with opacities which the patient sees as spots before the eyes. The degeneration extends to the lens

causing it to dislocate and in the ultimate stage the eye becomes a degenerated mass.

The refractive correction of myopia is opposite that of hyperopia. Because the incoming rays from distant objects focus in front of the retina, they have to be diverged to throw the focus farther back. This requires a minus lens which separates parallel rays of light. With the proper minus lens the myope's vision can be brought up to normal unless there are degenerative changes in the back of the eye. Of course, as soon as the myope can see



Nearsighted eye corrected by diverging lens—clear vision

clearly in the distance, any object brought in closer will focus behind the retina and he will have to use his accommodation to bring the focus up to the retina, just as the person with normal eyes does. As a matter of fact, when the myope is fully corrected his eye is made artificially emmetropic. Without his glasses the myope was accustomed to accommodate very little, if at all; with his glasses he must accommodate whenever he looks at anything but distant objects. This unaccustomed use of the accommodation may be bothersome at first and the patient will be tempted to remove his glasses when he does close work, but this would defeat part of the therapeutic value of wearing the glasses. It is commonly believed that in early cases of myopia a full use of the accommoda-

tion will slow up and sometimes check the progress of the disease. The proper action of the ciliary muscle is supposed to aid in the circulation of fluids in the eyeball and prevent stagnation and increased intraocular tension which tends to increase the length of the globe. It has been definitely shown in children that a full correction of their myopic error, with glasses worn all the time, will often halt the progress of myopia. Therefore, the glasses should be worn for both distance and near.

Many of the early cases of myopia, especially in school children, are seen as a direct result of continued close work. These are not necessarily true myopia, because there are no degenerative changes in the eye, but are often merely a spasm of accommodation. They are usually corrected, if seen early, by insisting upon less close work and a proper reading distance. Sometimes it is necessary to relax the accommodation by the use of drops, when it may be found that the child is actually slightly hyperopic. Persistent abuse of the accommodation in this way may result in permanent changes, so that in time it becomes unable to relax to its normal state of rest and we have a myopia due to spasm. With proper care this should never increase.

Myopia proper should be treated as a constitutional disease, and general hygienic supervision should accompany the ocular treatment. Any congestion in the coats of the eyeball will tend to distend them because of their inherent weakness, and one of the chief causes of congestion in the head and neck blood vessels is poor posture. Standing and sitting, the myope must watch his posture. He should never read in bed. Illumination must be of the best, and the best means avoidance of glare as well as sufficient intensity. Poor illumination requires holding the book closer which puts a strain on the converging muscles, which, in turn, compress the eyeball. Constipation should be avoided. In fact, the myope deserves and requires the best in general hygiene, with particular attention to his reading conditions. The limitation of close work will depend upon the amount of myopia and the progress it is making.

In the smaller amounts of myopia where the progress is not marked and correction with glasses gives normal vision and no discomfort, the patient may be able to carry on as well as his

brother hyperope. But where the disease is progressing fairly rapidly, he must be discouraged from sedentary occupation, especially where close work is involved. The simple out-of-door life is best for him. Physical strain should be avoided, such as piano-moving or boxing, for fear of detaching the retina. Good simple food, plenty of fresh air and rest and a general toning up of the whole system is the best insurance for the high myope.

The prognosis in low degrees of myopia is good. Glasses will correct the vision and good general health will safeguard the health of the eyes. Where the myopia progresses the prognosis must be guarded. A slight progress in the early years of life may not continue and the patient will suffer no ill. But where the progress is definite and rapid the prognosis is very bad. It may be necessary to change the patient's occupation and whole course of life. It will always be necessary to curtail close work or forbid it altogether. The possibility of complete blindness or industrial blindness should always be borne in mind.

The family must be made to understand the general character of myopia in its worst form. General living habits, with strict attention to fresh air, illumination, rest, out-of-door activities and curtailment of close work must be emphasized.

### **Astigmatism**

Astigmatism is a refractive error due to the shape of the eye. The different meridians do not have the same focus and for that reason, the patient cannot get a clear image on his retina. All the meridians may be hyperopic, that is, they may all have their focus behind the retina, but because they do not have their focus in the same place, the image is distorted, even though accommodation be called into play. Accommodation cannot correct astigmatism because it cannot change the focus of one meridian without changing all the others equally. In myopic astigmatism where there are different foci in front of the retina, accommodation would be of no use anyway. In mixed astigmatism, some of the meridians have their focus in front of the retina, and some have their focus behind the retina. In every case of astigmatism the image is blurred.

When the astigmatism is very small (and most of us have a small physiological amount), there may be no conscious blurring

or distortion, but in higher amounts it will be noticed that an object appears fuzzy in one direction. This blurring may not prevent the patient from seeing 20/20 because he has learned from experience to fill in the missing or blurred parts of letters, but persistent use of the eyes will cause discomfort. Even though the accommodation cannot correct astigmatism, it will make every effort to do so, especially when the astigmatism is hyperopic. As a result the patient will suffer from accommodative strain. Fully sixty per cent of functional headaches have been attributed to astigmatism, especially in the lower degrees. Reflex nervous disturbances are fairly common. One patient at the Infirmary volunteered the information that before he got his glasses for astigmatism he had been subject to fits of an epileptiform nature. Glasses cured him.

In the higher degrees where the vision is cut down, the patient usually goes to the doctor to see what is wrong, but in the lower grades, every attempt will be made to accommodate or twist the head to get better vision. When the astigmatism is off axis, i. e., not vertical and horizontal, there is liable to be a certain amount of head tilting, and Gould has shown a definite relationship between some cases of astigmatism and curvature of the spine. Some men believe that low grades of astigmatism are responsible for the beginning of myopia because of the attempt to correct it by accommodation.

Astigmatism is corrected in only one way, by the use of cylinders. A cylinder is a glass which converges or diverges the incoming rays of light so that it will correct the meridian at fault and not affect the meridians which need no correction. When the correction for astigmatism is worn the patient sees the image erect and clear and is soon relieved of his subjective complaints.

The prognosis in astigmatism is good as regards the vision, when the glasses are worn. It should be emphasized, however, that while the wearing of glasses will correct the symptoms of astigmatism, it will not correct the underlying fault, that is, the asymmetrical shape of the eye. It may not be possible to give the full correction in the first pair of glasses, especially when the amount of astigmatism is fairly high. In such cases the highest comfortable correction should be given with the idea of increasing it to the full

amount subsequently. Naturally, as soon as the glasses are removed, the patient gets the same old blurred image on the retina. He should be made to understand that his astigmatism proper cannot be corrected by glasses.

As a rule, the oculist will instruct the patient in the wearing of his glasses for whatever error he may have. There is no hard and fast rule that will apply to all patients; in general, correcting glasses for astigmatism and myopia should be worn all the time, while the correction for hyperopia and the wearing of it is determined by the needs and complaints of the patient.

## Prevention of Blindness in Illinois

Audrey M. Hayden

**W**HAT the State of New York does to protect eyesight was told in the last issue; we now present a picture of sight conservation work in Illinois; and the efforts of other states will be chronicled in future issues

**T**HE program of the Illinois Society for the Prevention of Blindness is fivefold: Preventing blindness among newborn babies; conserving vision among school children and preschool children; control of trachoma; research and education; and legislation.

The Illinois Society is not a case-working organization but a demonstrating agency whose function is to convince state and city organizations of the need for and the practicability of prevention of blindness.

### **Ophthalmia Neonatorum**

For years the Illinois Society for the Prevention of Blindness furnished an hourly nursing service for ophthalmia neonatorum cases in the city of Chicago. During the past ten years 1,294 cases have been rushed to hospitals by our nurses where immediate and drastic treatment was administered to their eyes. All these babies were saved from blindness.

Last year our Society turned over to the City Board of Health of Chicago a trained worker on ophthalmia neonatorum and the last city budget included her salary. This worker not only hospitalizes the babies, but investigates all midwife cases where there has been an incidence of ophthalmia neonatorum thus educating the midwives to the necessity for prophylaxis. Our organization is of the opinion that isolated cases of prosecution of midwives will never solve the problem of ophthalmia. We feel that the present

statute in the state of Illinois is entirely inadequate and that blindness among newborn babies will never be stamped out until the law in regard to the treatment of the eyes of newborn babies is made mandatory. More will be said of this subject under legislation.

Beginning September 1, 1931, two of our nurses started on a county organization program on ophthalmia. This program includes interviewing every hospital in each county to see whether or not they will accept ophthalmia cases; checking the birth certificates in each county seat to ascertain which doctors are meticulous about the use of a prophylactic and which are not; acquainting the women's clubs, parent-teacher organizations, service clubs, the organized medical profession and the organized public health agencies with the incidence of ophthalmia in their county and in the state and enlisting the help of the medical profession to better conditions for newborn babies in Illinois. We were delighted with the fine spirit of co-operation which we found when we approached the Chicago hospitals. We also plan to visit all the midwives.

### Conservation of the Eyesight of School Children

An important part of our work is the examination of the eyesight of school children. During the past year we have worked in the following towns:

	Number Examined	Number Found Having Eye Defects	Sight- Saving Cases
Decatur.....	1,414	259	15
Deerfield.....	38	9	0
Elgin.....	402	127	13
Evanston.....	1,184	226	6
Glencoe.....	939	59	2
Highland Park.....	305	31	4
Highwood.....	97	15	0
Hubbard Woods.....	199	53	0
Joliet.....	323	126	8
Kane County.....	210	32	2
Lake Bluff.....	45	7	0
Lake Forest.....	258	20	1
Springfield.....	2,963	590	14
St. Clair County.....	4,927	237	5
Wilmette.....	93	11	3
Winnetka.....	199	60	0
Totals.....	13,596	1,862	73

Besides these examinations made outside Chicago, the Prevention of Blindness Department of the Chicago Board of Health tested the visual acuity of 9,134 children, of which 2,770 were found to have defective vision. Of this number 109 pupils were recommended for sight-saving classes.

In making a survey of the eyesight of school children our nurses first approach the county medical society and enlist the interest of the local doctors in our program. They then visit all eye men in the district explaining the type of children for whom we are searching as possible candidates for sight-saving classes. They also confer with all the optometrists explaining to them the sort of children we want and urging co-operation in sending pathological cases through to an oculist. The entire school board is consulted and the work explained to them and, with their permission and that of the superintendent, we enter the school system.

In examining the eyes of the school children in a given school our nurses explain to the teachers and to the school nurses the sort of children for whom we are searching and ask that they send to the examining room all children suspected of having eye defects, all strabismus cases, all nystagmus cases and all glasses cases. We use the preschool technique on first and second grade children and the regular Snellen chart on the upper grade children. Each principal is furnished with the list of eye defects in the building and the school nurses are furnished with similar lists.

The children found having defective vision are then routed through the school nurses to oculists for examination and correction. We find that our work always stimulates eye corrections in any given territory. After the ocular reports have been received on the children, the sight-saving class candidates are set aside and home calls are made by our nurses on the parents of these children in order to urge them to co-operate with the local school board by placing the children in sight-saving classes.

The school board is asked to select one of its best teachers to be sent to a special course on sight-saving class work. No class in Illinois, outside of Chicago, has opened without a trained teacher and the Illinois Society for the Prevention of Blindness has co-operated with the National Society for the Prevention of Blindness and the University of Chicago in filling the classes at the summer

course for the training of sight-saving class teachers. Thirteen teachers from Illinois were trained for sight-saving work at the various courses this summer.

The superintendent of schools is then furnished with a complete list of the best sight-saving class equipment and specifications for a sight-saving classroom, natural and artificial lighting, painting recommendations, etc.

In the past two years classes have been opened in: Joliet 2, Rockford 2, Rock Island 2, Aurora 1, Evanston 1, Elgin 1, and Springfield 1. We hope to open in Peoria and Decatur in February. There are now 28 classes in the city of Chicago.

At three months' intervals our nurses go back and check over the original list of defects with the school nurses in order to have a complete record of all corrections made to date. In this way active interest is stimulated in getting 100% corrections. This is always the most difficult part of a survey and the only thing, we feel, which justifies it. Of the 1,862 downstate children with visual defects, 897 have already had corrections.

In every town where we have made surveys of the eyesight of school children, we have also observed the lighting of the school rooms. Five measurements have been taken with a foot candle meter with natural and five with artificial light. Superintendents have been very much interested in these lighting surveys and they have resulted in many changes for the better in both natural and artificial lighting in the schools visited. In many cases, at our recommendation, the seating and the curtains have been changed. We have furnished the superintendents with minimum standard requirements for natural and artificial lighting and we feel that a great deal of good will result from the interest shown.

### **Control of Trachoma**

The lower end of Illinois, lying between Kentucky and Missouri, is a part of a large area which has always had a high incidence of trachoma. In both Kentucky and Missouri there has been state and federal control of trachoma over a period of years. Illinois, however, has never had any definite control program set up. In 1920 the Illinois Society for the Prevention of Blindness, together with the State Department of Health, the American Red Cross,

the State Department of Public Welfare and the Illinois Eye and Ear Infirmary, co-operated on a survey of trachoma in southern Illinois. Although the findings were very important, nothing was done about them because of a change in state administration.

In 1928 the Illinois Society for Prevention of Blindness made an intensive study of the causes of blindness on the Blind Pension Roll of the state of Illinois. It was found that in the southern part of the state the incidence of blindness from trachoma on the Blind Pension Roll was very heavy. We therefore suggested to the State Board of Health that they ask federal authorities into the state to co-operate with us on some diagnostic clinics in order to determine the amount of trachoma in the southern part of the state and its importance as a public health problem. After a year of conferences, the federal authorities were invited in. Four southern counties—Williamson, Union, Saline and Gallatin—were taken for the survey because in these counties more cases of trachoma appeared on the Roll than in any others. Two nurses from the Illinois Society for the Prevention of Blindness did all the field work for the clinics. The clinics were manned by doctors from the Federal Hospital at Rolla, Missouri. Six clinics were held:

June 16th	Herrin.....	102 reported
June 30th	Marion.....	96 reported
July 12th	Harrisburg	} ..... 191 reported
July 12th	Shawneetown	
July 30th	Jonesboro }	} ..... 178 reported
July 30th	Dongola }	
Total.....		567

Of 567 examined, 252 active trachoma cases were found, a number equal to any reporting at clinics in similar regions of Kentucky and Missouri. It was therefore definitely established that trachoma presented as serious a problem in this state as in either of the adjoining states where it had been thought necessary to set up a control program. The State Board of Health immediately put a permanent nurse in the field, and hospitalization of the 252 cases was begun.

The nearest hospital for work of this kind was the Illinois Eye and Ear Infirmary in Chicago, over 300 miles away from the district where most of the trachoma was occurring. It was very diffi-

cult to persuade trachoma sufferers to make the long journey to Chicago, and even more difficult to prevail upon them to stay after they got there. After a year's work on this problem the State Board of Health, the Illinois Eye and Ear Infirmary and the Illinois Society for the Prevention of Blindness have decided that some sort of a small unpretentious hospital must be put in the southern part of the state to accommodate these forlorn people who so badly need treatment to prevent blindness. The Illinois Society for the Prevention of Blindness has been approached to raise the money for such a hospital and we have already undertaken this project. We hope that before another year is passed we shall see such a hospital established and flourishing in the southern part of Illinois. We feel that if we are able to bring about such a solution of the trachoma problem it will be an important contribution to prevention of blindness in Illinois.

### Research and Education

Our educational work is done through lectures, moving pictures, letters and through our literature. More and more we are called upon for educational talks and more and more are there requests for copies of our literature and reports.

During the winter of 1932 we plan to hold joint meetings with the medical social service workers of Chicago. Dr. E. V. L. Brown and Dr. William H. Wilder have consented to get together a group of lecturers who will talk to these workers on the various diseases of the eye. The National Society for the Prevention of Blindness has already ably demonstrated the value of such a project.

During the past three years we have conducted three studies.

**Blind Pension Roll Studied.**—A study of the causes of blindness on the Blind Pension Roll of Illinois showed that there were 3,517 people on the Roll. Of this number we were able to obtain diagnoses:

From oculists on.....	1,751
From general practitioners.....	990
From pensioners.....	438
From optometrists.....	2
Total.....	3,181

We considered 137 of the diagnoses unsatisfactory and we were unable to find at addresses given by the county clerks 199, which accounts for the 3,517 on the Roll at that time (June, 1928).

SUMMARY OF CAUSES OF BLINDNESS ON BLIND PENSION ROLL OF  
ILLINOIS

Opacities of cornea		
From trachoma.....	339	
From other causes.....	321	660
Cataract in all forms.....		716
Affections of uveal tract.....		113
Affections of retina.....		72
Glaucoma and complications.....		295
Affections of optic nerve and complications.....		595
Trauma.....		388
Post-operative.....	187	3,026
All other causes.....		491
Total.....		3,517

This report was read before the Ophthalmological Society of Chicago on May 30, 1931, and was later published for distribution. As a result of the findings on the Blind Pension Roll the trachoma survey was made in 1930 which has had far-reaching results.

**Midwifery Study.**—During 1929 a study was made of midwifery in Illinois. We used as a basis for this study the only list of midwives available for the purpose—namely, a list in the Department of Education and Registration dating back to 1878 without correction of any kind. Our findings were briefly as follows:

Total number of midwives practising with licenses on September 1, 1929.....	393
Total number of midwives known to be dead.....	527
Total number of midwives found to have moved from the state.....	31
Total number of osteopaths registered as midwives in Cook County but apparently not practising.....	45
Total number of whom we were unable to get information and whose names do not appear on the birth records for the past 5 years.....	2,190
Total.....	3,186
Total number of midwives found practising without licenses.....	114
Total number of active midwives in Illinois.....	507

Copies were collected of the laws regarding midwives in every state of the Union and all the countries abroad, together with the regulations for the practise of midwifery and the training of midwives in all foreign countries. This survey was used by the Governor's Committee on Child Welfare in the formulation of its program at the last legislature.

We are interested in better training and supervision of midwives in Illinois because we want better control of ophthalmia neonatorum.

**Compilation of Laws.**—In the past year a compilation of ophthalmia neonatorum laws was made by our office. These laws have been placed in the hands of Dr. Ernst Freund of the Law Department of the University of Chicago, who will use them as a basis for a legal study.

### Legislation

In the legislative session of 1929 the Illinois Society for the Prevention of Blindness fostered a bill which arranged for state subsidy of sight-saving classes for children with defective vision in the public school systems of the state. This bill set forth certain qualifications for teachers; placed the supervision of sight-saving classes in the Department of Public Instruction, although the actual subsidy of the classes is in the hands of the Department of Public Welfare in accordance with state codification; and raised the subsidy for such classes to \$250 per year per child. At that time the Legislature appropriated \$49,000 for such classes in Illinois. This was \$20,000 more than had ever been appropriated before.

At the session of 1931 the Illinois Society for the Prevention of Blindness sponsored a bill which made mandatory the use of a prophylactic in the eyes of babies at birth. This bill had the support of the State Medical Society, the State Board of Health, the State Parent-Teacher Association, the State Federation of Women's Clubs and the Lions Clubs. The bill was bitterly fought by the Christian Scientists and other anti-medical groups who literally flooded the Legislature with protests against it. On March 3 the bill passed second reading and the Christian Science amendment was voted down 112 to 14. This amendment

provided that if the parents or guardians objected to the use of a prophylactic on account of religious beliefs, they would be exempt. On March 10 the bill passed the House by a vote of 114 to 5 and was referred to the judiciary committee of the Senate. At the hearing before this committee the Christian Science amendment was voted down 11 to 7 and the bill recommended to pass. On April 27 the bill passed second reading and the Christian Science amendment was again voted down 27 to 12. The next day the bill passed the Senate by a vote of 36 to 6.

The bill was sent to the attorney-general on May 7 and was returned to the governor on the night of May 18, the attorney-general declaring it unconstitutional in that "the police powers of the state did not cover the situation and that individuals had certain fundamental rights which must be protected." On May 19 Governor Emmerson vetoed the bill and it was sent to the House that afternoon with the veto message. The House immediately took action which has not occurred in 40 years in the Illinois legislature, namely, the bill was passed over the governor's veto by a vote of 116 to 15. It was immediately referred to the Senate where 34 votes were needed to pass over the governor's veto. The next morning the bill came up for vote and only 28 votes were mustered. Thus the bill was lost.

Strong editorials defending the bill appeared in no less than eight papers in Illinois. The June 1 issue of the *Journal of the American Medical Association* carried a two-page editorial and the July mid-monthly number of the *Survey* carried another. Many lawyers sent in requesting copies of the bill that they might make a study of its validity. The Legislative Reference Bureau had assured us that the police powers in the state of Illinois were unlimited where the loss of life and limb was concerned and that loss of eyesight was ranked as equivalent to loss of life or limb. There can be no doubt that a great deal of educational work resulted from the attempt to put the bill across and we can only hope that next time a similar bill will fall into kinder hands and we shall yet see the day when everything legislatively possible will be done to prevent blindness among newborn babies in Illinois.

Certainly no group of legislators could have given kinder treat-

ment to a prevention of blindness agency than the 204 men and women in the House and Senate of Illinois. That the bill passed the judiciary committees, made up of the lawyers of both bodies, where it received careful consideration, is a potent comment on its constitutionality. The Legislature of 1931 voted \$139,500 for sight-saving classes in the state of Illinois. As this is almost three times as much as last biennium, it will readily be seen how friendly the Legislature is to our work.

As James Weber Linn said in commenting on the veto of our Baby Bill, "It takes imagination to appreciate a prevention program. Nobody without imagination ever lies awake at night worrying about the preventable misery of others." And so, really to appreciate prevention of blindness, one must have imagination enough to appreciate the horror of blindness. Helen Keller said, "Of course better work for the blind is going forward all over the country to lighten the burden of darkness; but however merry our blind children, however brave and self-reliant our blind men and women, could the utmost dreams of education for the sightless be realized, the dark is still the dark, and blindness an irremediable calamity. Therefore, I say, let us check this dread disease and danger. If one-tenth of the money we now spend to support unnecessary blindness were spent to prevent it, society would be the gainer in terms of cold economy, not to mention considerations of happiness and humanity."

## Good Eyesight in Industry\*

Herman P. Davidson, M. D.

**A** PART from humanitarian considerations, Dr. Davidson points out, industry has learned that money spent in guarding the eyesight of workmen is a good investment; it reduces the expense of accidents, salvage, compensation, etc.

**I**N THE consideration of safety in industry, the importance of eyes cannot be overestimated. It is not only necessary to guard machinery and wear goggles, but to have good eyesight. While the vision of many is defective, fortunately most defective vision is correctable. In middle life, from forty on, in fact, the focussing power of the eye is less elastic. Very often this may be corrected by wearing the proper glasses. It is at this age that many of us must wear two-in-one glasses, or bifocals, to assist us in near and far vision.

In my organization, during eight years, approximately 11,000 pairs of eyes were examined at the Pullman Car Works, with 25,843 separate visits. Of these, 42 per cent achieved normal vision (some had normal vision while others required glasses to make them normal). Fair vision was obtained in 37 per cent with or without glasses. This makes 79 per cent with good or fair vision in both eyes—leaving 21 per cent with poor or bad vision in one eye or both, that glasses could not help. Of this 21 per cent, 0.6 per cent were one-eyed men. This summary, on its face, looks as if the Company has nearly one man of every four with at least one bad eye; but that is not the case. Some of these men came in for pre-employment vision test, and were rejected. Others were employees of interlocking companies, whose sight had failed and were sent in for opinions and reports. Then there are the employees

\* Extract of address delivered before the National Safety Convention in Chicago, Illinois, October 14, 1931.

who have been pensioned off and are entitled to treatment. So there is no definite way to find out what percentage of those working have defective sight, and actually the figure is less than 21 per cent.

Good eyesight is essential in industry because it increases the man's efficiency, relieves him of eyestrain, makes him less likely to have accidents or cause accidents. It reduces the employer's compensation payroll and it reduces the salvage bill. This far overshadows the cost of medical care and the cost of protective goggles in dollars and cents—not to speak of the humanitarian phase of the question. Some companies sell goggles to their employees, but our organization, as well as the interlocking companies, gives them prescriptive goggles free of charge.

#### EYE REQUIREMENTS AT SELECTED POSITIONS IN AN INDUSTRIAL PLANT\*

Hazardous occupations		Without glasses	With glasses
Crane operators	{ Electrical Locomotive Mono-rail Hook-ons	20/30 or better	
Transfer table	{ Operators Helpers Hook-ons	20/40	20/20 one eye 20/30 other
Transportation†	{ Train crews Truck drivers Tractor	20/20	20/20
Machinery	{ Band sawyers Press Punch press Shear Includes helpers and operators	20/40	20/30
Wood working	{ Shapers Gainers Sawyers Joiners Sticklers	20/40	20/30
Welders		20/40	20/30

\* Pullman Car and Manufacturing Corporation, Chicago, Ill.

† Color tests are also given to these men.

An employee who sees well is less likely to ruin his work and thereby saves salvage. He has a fraction of a second more to get out of danger and he is less of a hazard to his fellow worker. Furnishing a pair of vision correcting goggles, or a dozen pairs, won't make a lazy man change his ways, but it can help the conscientious man who has poor vision.

The oculist can do much for safety and efficiency. He can take men off dangerous occupations. For instance, a band sawyer with bad vision and trifacial neuralgia is transferred from the saw. There is no way of telling whether this man would have been a compensation case, but in his new job he can't tempt Providence. In our plant certain occupations require a set standard of vision. For instance, crane operators hook-ons, transfer table operators, train crews, punch press, shear and band sawyers, and in the wood working, shapers, gainers, sawyers, joiners and stickers, must pass annual eye examinations.

The compensation bill is reduced through prompt attention and skilled care soon after any accident. This immediate attention has eliminated the "picker" and other hazardous first-aid measures from the plant. The oculist also has a definite record of vision on entrance, and if the eye is bad at that time, he can definitely refute a false injury claim made later. This happens far more frequently than you would imagine. An employee with previously good vision is injured while on his own time in a broken wind shield injury. He is off some time before returning. He is sent to the oculist before being re-hired to "get a new pair of goggles." He does and his injury and vision are noted. Later he claims injury in the plant. As a result of rechecking each time hired, he cannot put over his false injury claim. In many such cases the record is a real asset to the company. Sometimes there has been a trivial injury on which the man could lay his claim, but he just as often says it is one eye that was injured, when in reality, it was the other. Of course, the legitimate injury case is paid fair compensation.

There is no way to check up accurate results from our better vision and goggle policy, for before accurate records were kept the men did not come in for trivial injuries but let the "pickers" remove the foreign substance. From 1916 to 1921, 30.8 per cent of all injuries that came to the dispensary were eye injuries (severe

and mild). From 1923 to 1930, 24.5 per cent of all injuries that came to the dispensary, including all trivial injuries, were eye accidents. In 1923, the first year the oculist was on duty, 843 eye injuries were reported of 21,327,130 work hours. This includes the severe accidents and very mild scratches. In 1930 there were 145 injuries out of 7,725,833 work hours, quite a considerable reduction when you compare the number of hours worked. Although most of these injuries are trivial ones, they are all counted.

It is interesting to note the gradual change of attitude of the men about goggles. They considered it an affront at first; but they now request them. If an injury does occur, there is generally an apology such as, "I was just wiping my goggles when something hit my eye." Formerly they expected to have eye injuries.

The safety program in industry benefits not only the company and its employees, but its influence extends far beyond the walls of the plant. Realization of the importance of good vision, of proper illumination and of eye protection and hygiene, is a contribution to society in preserving good eyesight and preventing unnecessary impairment of vision among the men and their families.

# Organization of Sight-Saving Classes\*

Gladys L. Dunlop

**C**HILDREN with seriously defective vision are a pedagogical problem which may be solved by the establishment of special classes, such as Miss Dunlop describes here; it is estimated that 5,000 of these classes are needed in the United States

A LARGE portion of the school population suffers from eye defects. Recent reports of the National Society for the Prevention of Blindness indicate that at least one child in one thousand should receive the benefits of sight-saving class training.

This special type of education grew out of the demand for a school program adapted to the needs of the children with seriously progressive eye defects and those who did not have sufficient vision to use regular school equipment though they were in no sense of the word blind.

The first class in the country was established in Boston in April, 1913. Owing to the many problems involved, the growth has been very gradual. It is gratifying to note, however, that during the past year there has been an increase of 7 per cent in the number of classes. Further efforts should be made to establish approximately 5,000 classes which are necessary if a satisfactory educational program is to be provided for the children with serious eye difficulty.

Perhaps the most difficult factor in the organization of a class is the selection of those who would profit by this very special type of training. In establishing the work for the first time, careful studies should be made in co-operation with the local health agency procuring correction and treatment for those suffering from serious eye defects.

Candidates for the classes are usually discovered through routine health examinations by teachers or nurses. An endeavor has

\* Reprinted with permission from *The American School Board Journal*, August, 1931.

been made to set up guides which may serve all school systems in finding potential sight-saving class candidates.

### Principles of Choosing Children

In connection with the summer course at the University of Chicago, 1928, several ophthalmologists who were familiar with the sight-saving program met in a conference with teachers and supervisors to consider guides which may serve in placing those, who, after having expert ocular services, need in addition special attention in the classroom. The following guides were formulated and since that time have been generally used by the various states and cities in classifying children:

1. Children having visual acuity of 20/70 or less in the better eye after proper refraction. In addition, the following are recommended as potential candidates:
  - (a) Children in elementary schools having four or more diopters of myopia.
  - (b) Inactive, subsiding (or regressive) cases, such as interstitial or phlyctenular keratitis, optic neuritis, trachoma, etc., in which some irritation may be present, provided the approval of the attending physician is given.
2. All cases must be considered individually.
3. Any child who, in the opinion of the ophthalmologist, might benefit by assignment to a sight-saving class, subject to suggestion for treatment and training by such oculist, and the acceptance of the educational authorities having charge of such classes.
4. It is assumed that all the children assigned to sight-saving classes have average normal mentality.

### Physical Environment

Having determined the number of children for the class, careful attention should be given to the selection of a room. Since one room must serve several buildings, it should be centrally placed in the district and must also be convenient to transportation lines. If possible a newer type of building having correct lighting and modern equipment should be decided upon, thus minimizing the cost of opening a class.

A full size classroom is desirable in order to take care of the extra equipment which these classes demand and to provide sufficient space for these low visioned children to move about.

The best authorities on lighting state that in every classroom there should be "a maximum light with a minimum glare." A sight-saving classroom is selected and equipped with these essentials in mind.



Good lighting and other equipment help to make this a real sight-saving class

A northern exposure was for a long time considered best, for here the light is least variable and for this reason can be easily controlled. Most recent investigations have proved that an eastern exposure is more desirable since it gives the children some sunlight. Poor eyes are often a reflection of unhealthy bodies and every attempt is made to improve the physical condition as well as to provide proper working conditions.

### The Lighting Problem

The glass area of the windows should be equal to one-fourth of the floor area. Windows should be at least three feet from the floor

and no nearer the front of the room than seven feet. They should also reach almost to the ceiling since we must depend on light from the top to light the far corners of the room. Unilateral lighting is always preferred. Wall tints are also considered important and from a lighting point of view should be finished in light buff with ceilings in cream.

Careful consideration is also given to artificial lighting. Indirect lighting was for a time believed to be the only satisfactory installation for sight-saving classrooms but too often not enough attention is given to maintenance which detracts considerably from the efficiency of the light. Observation and experience have determined therefore that the direct light, with totally enclosing translucent shades is most desirable.

The correct type of window shades provided a sight-saving classroom is of vital importance. According to the "Code of Lighting School Buildings," issued by the Illuminating Engineering Society, shades must perform several functions: (1) Diffuse direct sunlight; (2) control the illumination to secure reasonable uniformity; (3) eliminate glare from visible sky, adjoining buildings or from the blackboard.

These conditions are best met by equipping the windows with two buff translucent shades, each operating from the center. Care should be exercised, however, in installing them so that no light enters between the two rollers. Shades on fixtures which may be adjusted at any part of the window are sometimes supplied. However, these are not advisable since with very frequent adjustment they are soon in disrepair.

### **Essentials of Equipment**

All furniture and woodwork in sight-saving classrooms must have a flat finish, since highly polished surfaces are a source of glare.

Movable desks with adjustable tops are necessary. The slanting top provides a proper focus and the pupil may at any time move the desk to a place where he may obtain the best light considering his own particular difficulty.

Special supplies for the class include soft cream manila paper (9 x 12 inches) such as is furnished in most art classes. The same type of paper should be purchased lined in green or black about

three-fourths of an inch apart. All written work is done with a soft pencil. Any good grade of soft drawing pencil is acceptable providing it produces a clear, even black line that does not smear easily.

Bulletin typewriters are also an essential part of the equipment of the classroom. Teachers use the machines to prepare certain material in large type. Furthermore, they are more satisfactory



Projects have as much a part in the sight-saving class program as in the regular classes

for the children's use. Typewriting is taught all pupils above the fourth grade, not as a vocation but as a means of saving eyes. Careful instruction enables the individual to master the keyboard within a few weeks. Following this, composition, spelling, or any form of written work may be prepared without involving the use of the eyes.

Books in twenty-four point type on cream paper are furnished all the classes. These are procured only from the Clear Type Publishing Company, Montclair, New Jersey.

### Class Organization

Sight-saving classes should always be organized on what is known as the co-operative plan of education, the children doing all the study and written work in the special room with the sight-saving class teacher but reciting with those of normal vision. This provides social contact as well as academic competition.

The only deviation from the program as set up for regular classes is an elimination of such subjects as require considerable close eye work—art, library, and sewing. In the place of these, the special teacher provides different types of handcraft which do not involve close use of the eyes. Here the child has an opportunity to express himself and to learn certain activities which he may pursue outside the classroom and thus avoid engaging in those from which eye injury might result.

The greatest factor in the success or failure in any sight-saving class program is the teacher. No individual should be assigned without having had special training for the work. Intensive summer courses have been introduced at the University of Chicago, University of Cincinnati, University of Southern California, Buffalo Teachers College, Columbia and Tulane Universities. Such courses give consideration to ocular problems including anatomy, physiology and hygiene of the eye; eye diseases and the errors of refraction. With this information and a background of satisfactory teaching experience, the teacher can well adapt modern methods and materials to the needs of the sight-saving class child. Without this special training, a teacher is incapable of providing for individual differences with respect to eye conditions.

While education costs for the child with low vision are in excess of that for normally sighted children, this should not be a deterring factor when considering the organization of the classes. Special education costs less than academic failures and juvenile delinquency. Such are the inevitable fates of boys and girls with imperfect vision unless special provision is made for them, for the whole of life becomes distorted to the degree which the pupil suffers in attempting to meet life's situations.

## Venereal Disease and Prevention of Blindness\*

Louis Lehrfeld, M.D.

UNTIL recent years there was great reluctance to speak publicly and truthfully of the very close relation of the so-called "social diseases" to impairment of vision and total blindness, but the facts are becoming more and more frankly recognized and discussed

### Ophthalmia Neonatorum

ONE of the most distressing and pathetic charges against humanity is that portion of the blind population which owes its ostracism from society to ignorance, indifference, and neglect. The disease I refer to is ophthalmia neonatorum. So simple a prophylactic as the instillation of a drop or two of silver nitrate in the eyes of a newborn infant is omitted by reason of prejudice, by reason of sentimentality, by reason of stubbornness, by reason of unwillingness to accept the teachings of those who know.

Some thirty years ago, 28 per cent of admissions to institutions for the blind in the United States were due to blindness from ophthalmia neonatorum.

There is need for educational propaganda, not so much by the medical profession, but by those generous-hearted lay persons who give their time and interest to aid in the enforcement of laws and in the education of the lay public.

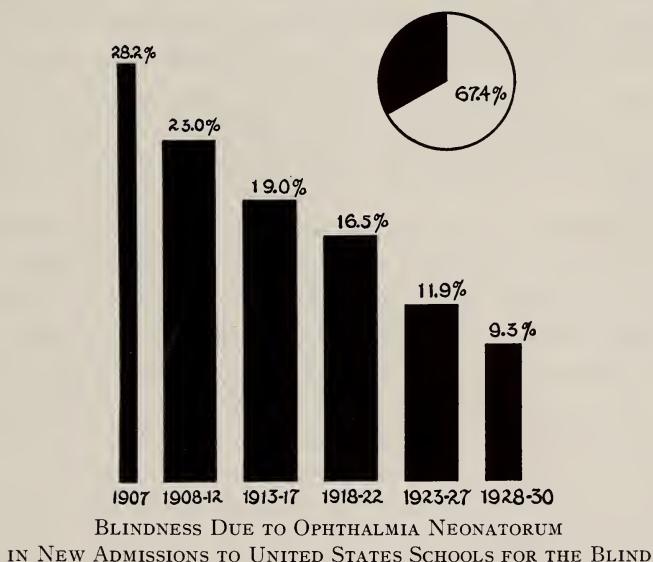
There is no longer need to show proof that silver nitrate in one per cent solution, instilled in the eyes of the newborn, will definitely prevent ophthalmia neonatorum. In like manner we know that smallpox is positively prevented by vaccination; we know posi-

\* Extracted from address delivered at the April meeting of the Lycoming County Medical Society.

tively that diphtheria can be prevented by toxin antitoxin; yet we find smallpox to be prevalent in certain parts of the United States, and we know that diphtheria exists in larger proportion than is consistent with our known methods of prevention; and so with ophthalmia neonatorum. In spite of the fact that we know how to prevent it, yet at the present time, approximately nine per cent of the admissions to the homes of the blind are among children who have been blinded by ophthalmia neonatorum.

### Scientific Medicine's Contribution to the Reduction of Ophthalmia Neonatorum

23 Year Decrease



The point at issue is: how can we reach every newborn babe with the view of carrying out the known and positive method of prevention of this disease? Surely much has already been done in the state of Pennsylvania by making it compulsory for midwives to use the prophylaxis essential for the saving of sight. Unfortunately there is no law which compels the physicians to make that instillation. There is, however, an unwritten law which makes every physician guilty of malpractice if he does not use the methods commonly accepted in his own locality. Surely no physician would like

to be questioned on the witness stand as to why he failed to use a prophylactic in the eyes of the newborn babe if that case would have resulted in blindness. Any difference of opinion from the accepted principles of the medical profession would not be accepted as an excuse in this instance. He could not bring to his defense any physicians who would be willing to testify that it is a good practice to omit such a prophylactic. Yet, one of our leading medical organizations in Philadelphia refuses to go on record as urging the passage of a bill which would make it mandatory to use a prophylactic at the time of birth. Personal pride, fear of loss of individual rights, and the fear of permitting the legislative bodies to dictate to the medical profession, have greatly impeded our progress in the complete elimination of ophthalmia neonatorum. And yet, we criticize Christian Scientists for combating the enforcement of laws which make vaccination compulsory, when physicians themselves will attempt to combat the enactment of laws which will require them to use a standard for the prevention of ophthalmia neonatorum.

It is impossible, of course, to establish compulsory laws of this kind in a state or country where freedom of thought and action is regarded as an inalienable right. In a state where it is permissible for any man, woman, or child to buy a dangerous firearm, it is to be expected that the people also wish their personal liberties to do as they please with their children's eyes. If these babies, however, had voices to speak and could appeal to our hearts for their right of protection to conserve and preserve their eyesight, I am sure that there would not be a single case of ophthalmia neonatorum resulting in blindness.

It would be ideal, indeed, if our public health program were so idealistic that every expectant mother would be required to undergo a physical examination to determine the presence or absence of infection. While the public health nurses in this state have done much towards rendering prenatal care in the interest of the baby, there are many thousands who never receive such inspection or observation; but even if all this prenatal work amounted to nil, still there remains the positive prophylactic method against ophthalmia neonatorum.

In a survey which I personally conducted in the city of Phila-

delphia, among the ophthalmia neonatorum cases reported over a period of ten years, I found that cases of ophthalmia neonatorum did develop in a small percentage of instances where silver nitrate had been used. If any of you here engaged in the practice of obstetrics will think for one moment how difficult it is to open the eyes of a newborn baby, you will at once understand that in a great many instances the silver nitrate never enters the eye but is allowed to remain on the skin surface of the lids and never reaches the conjunctival sacs for which it is intended. It is my thought, therefore, that the point to be stressed at this time is the teaching of nurses and of doctors how to open the eyes of a newborn baby sufficiently wide to instill the silver nitrate. This can readily be accomplished by drying the lids carefully with a piece of gauze and then wrapping the thumb of one hand and the index finger of the other hand with sterile gauze, separating the lids very wide and permitting someone else to instill the silver nitrate; or it may be done by one person, having wrapped the gauze about the thumb and index fingers of one hand, separating the lids, and then with the other hand, instill in the eyes; and if perchance the lids are still slippery and cannot be separated, it is a good idea to place the silver nitrate in the corner of the closed eye and then to attempt to open and close the lids as well as possible, permitting the solution to drain between the palpebral fissures. In most instances this will accomplish good results.

The second point in the prevention of blindness from this cause is a thorough treatment of the disease as soon as it develops. It has been a common experience to find nurses irrigating the eyes once every half hour or every hour and, on close observation, to discover that the irrigating fluid rarely if ever reaches the fornices of the upper lids. The gonococci, finding lodgement high up in the cul-de-sacs, multiply very rapidly and may destroy the eye within a very short time. It makes no difference what antiseptic solution is used, the irrigation must be thorough and complete.

In the absence of any other method, a bulb syringe may be used in which sufficient force is applied on the rubber ball to cause a steady force of fluid through the cul-de-sacs. Very often it is necessary to evert the lids in order to permit the free irrigation. I am positive when I state that every case of ophthalmia neonatorum,

when discovered early, can be completely cured. I am not recommending any particular type of germicide to be used against the cocci, but I do insist upon the thoroughness and the frequency of irrigation, because having freed the eye of all the pus, you, at the same time, reduce the number of bacteria present in the eye. Everyone knows how difficult it is to grow the gonococcus in artificial culture media. The human tissues, of course, with a normal body temperature are quite favorable to their growth. The virulence of the gonococcus is destroyed by a frequent irrigation. I personally prefer the use of 25 per cent argyrol instilled in the eye every half hour following thorough irrigation with warm boric acid solution. Between each flushing there must be constant applications of ice compresses. Atropine must be instilled in the eyes once a day in the effort to prevent plastic iritis in the event of perforation of the cornea.

### **The Prevention of Syphilis of the Eye**

Another treacherous and preventable disease responsible for blindness is syphilis. I refer to the congenital forms of syphilis which produce diseases of the choroid, disturbances of the nutrition of the eyeball giving rise to optic atrophy and congenital cataracts, and to interstitial keratitis which, if untreated, may result in complete blindness.

There are no statistics available indicating the prevalence of congenital syphilis involving the eyes. My own hospital experience of sixteen years at the Wills Eye Hospital prompts me to estimate that varying grades of partial and complete blindness are far greater than even the most conservative estimates. The most frequent form which comes to the ophthalmologist for treatment is interstitial keratitis. As early as the age of four, most often under sixteen, and sometimes in young adult life, this form of congenital lues is a living monument of syphilis in one or both parents. Apparently healthy children, usually robust, rosy cheeked, laughing and playful children, become suddenly blinded, their eyes a salmon red, lacrimation quite profuse, their heads bent to obscure the light. A more pitiable experience cannot be encountered in the whole of medical diseases. Children, themselves innocent of wrong, are sufferers for the neglect of parents to secure treatment

before rearing a family. In this respect the prenatal clinic can be of service. All expectant mothers before the fourth month should have a blood test performed.

This disease points out the great service a hospital can perform to a community. More especially does it emphasize the need of an eye clinic in conjunction with every general hospital where children may not only be treated for congenital syphilis but where a follow-up system will make it necessary for every member in that family to submit to a complete physical examination and a Wassermann or other blood test to determine the presence or absence of lues in other members of the family.

Not long ago, we, at the Wills Hospital, treated our cases of interstitial keratitis until the patients had sufficient return of vision for practical purposes, or until the acute eye symptoms subsided. Patients then disappeared or returned to their homes believing themselves cured, or at least the parents thought no other treatment was necessary. The cure of the eye condition does not mean a cure of the lues. Failure to follow up these cases, failure to seek the presence of lues in the family, meant that other children in the same family returned later for treatment of the same disease. In other words, the hospital did not perform its full function by treating only the individual case until the eye symptoms were relieved. It soon realized its full responsibility in this respect and now we have a well organized skin clinic, so-called because it is a less embarrassing name for use in an institution. Surely the children are not to be marked as outcasts by referring them to a venereal disease clinic. Now every child with interstitial keratitis is considered from the standpoint of being a public health problem. Each brother and sister is brought to the clinic for study of congenital lues. Both parents are requested to report for a blood test.

This method has brought to our attention infected families who otherwise would have provided menace to the community. These same infected children would have been the parents of another generation of lues. I have in mind one instance. A child, aged 12, was brought to the hospital with interstitial keratitis two years ago. A younger sister and the mother had positive blood reactions. The older daughter with the acute eye disorder was

treated routinely by antiluetic measures. The mother and younger daughter were urged to undergo similar treatments but failed to do so. Several months ago the mother brought the younger sister to the hospital with an acute interstitial keratitis, which taxed our best efforts to restore vision even partially. This is an instance in which neglect to submit the younger sister to treatment two years ago resulted in partial loss of sight which will be permanent. Had treatment been given two years ago, it is likely that the child would have been spared the incapacity which she now endures.

I mention this case to show that an eye clinic or dispensary is not merely a place to refract eyes or administer the treatment of the patient who applies, but it must serve as a health center aiming to give the community the benefit of preventive medicine. It must not merely aim to get the patient well of his eye disease, but attempt to treat the systemic disorder which made itself evident in the eyes. This applies to luetic iritis, luetic choroiditis, and scleritis. It applies to focal infections which manifest themselves as iritis, scleritis, optic neuritis, and vascular changes in the choroid and retina. At the Wills Hospital we have a nose and throat dispensary, a dental dispensary, an X-ray department, neurological and medical services which fit into our plan of treating the eye not merely as an isolated organ, but a part of the body which may reveal disorders primarily in the organ of vision.

## Editorials

Thomas Alva Edison

ON THE death of Thomas Edison, recently, the nation turned off its lights at ten o'clock in the evening for three minutes, to pay him tribute. It was a voluntary gesture, and everyone who did it must have spent the moments in the darkness considering the gratitude he owes Edison. The fact is we have grown so accustomed to the commodity which he perfected for us that we are not any more conscious of it than we are of the light nature affords us. And yet Edison has given us something that can be more reliable and more steadfast than natural light.

This gift of light, alone, is one of the greatest allies to society in its effort to conserve sight. The electric light today penetrates the home; the school; the office, factory, and mine; and the theater. It extends to the farthest corners of the earth. It assists silently and faithfully even in places where education has not yet made its inroads.

In addition to the part Thomas Edison played by developing the electric light, he participated, as a contributing member of the National Society for the Prevention of Blindness, from its very beginning, in the complete program for saving sight. Here was a man, tied by genius and unswerving interest to an impersonal and enslaving laboratory, who considered the needs of his fellowmen. His support remains an undying inspiration for those carrying on the work of preventing blindness and saving sight.

Somehow the picture one has of Edison is not that of a torch-bearer, going before the crowd. His natural modesty, his patience with the exactions of science, his laboratory method, all indicate retirement from the world rather than leading it. But if, indeed, Edison cannot be looked upon as having led us, he must be looked upon as having dwelt far ahead of us, shedding his light behind that we might see.

### Eye Health in Industry

There is considerable romance attached to the loss of eyesight or the preservation of vision; for the eye has often been poetically called "the window of the soul."

Stripping these conceptions of all their glamour, there are good economic reasons—the chief of which is the loss of millions of dollars annually—why consistent effort should be made to preserve and nurture good vision.

The chief causes of impairment or destruction of vision may be briefly named as follows: (1) Mechanical injuries; (2) chemical injuries, including the effects of external irritants and corrosives, and poisons taken internally; (3) environmental influences; and (4) visual defects.

According to the records, mechanical injuries are the most frequent and costly type of injury, and include cuts, piercing wounds, contused wounds, burns, and the impingement of small particles of dust, metal or other substances on the outer structures of the eye.

Chemical injuries are brought about by the corrosive effects of various compounds which are accidentally splashed into the eye. This expression also includes the effects of certain poisons absorbed by the body, such as various alcohols, tobacco, arsenic, carbon bisulphide, lead, aniline, and others.

Environmental influences are mainly concerned with artificial and natural lighting. Such lighting should be of sufficient intensity, without the production of glare or shadow.

The importance of visual defects as factors in the safety and health of industrial employees is not fully realized. Some of these are amenable to treatment; others cannot be corrected by our present known methods.

It is now possible for any industry to adequately preserve and conserve the vision of its employees through the scientific appraisal of the above-mentioned sources of visual handicaps. Both the National Society for the Prevention of Blindness and the National Safety Council will be pleased to supply specific information on these subjects.

C. O. SAPPINGTON, M.D., DR. P.H.

## Note and Comment

**Annual Meeting of the National Society for the Prevention of Blindness.**—The seventeenth annual meeting and conference of the National Society for the Prevention of Blindness was held during the morning and afternoon of November 19, in the Russell Sage Foundation Building, New York City. The usual conference program was curtailed this year to a morning session. A round table on Medical Social Work in Eye Clinics was presided over by Miss M. Antoinette Cannon, of the faculty of the New York School of Social Work. Miss Eleanor Brown, secretary of the National Society, opened discussion with a paper on "The National Society's Part in Training and Placement of Medical Social Eye Workers." Leading the discussion were Miss Amelia J. Massopust, of the Social Service Department of Bellevue Hospital and Miss Jeanne Wertheimer, of the Social Service Department of the Presbyterian Hospital.

It was agreed that the work and contribution of the medical social worker in eye clinics was most important in the prevention of blindness program, and suggested that this same training be opened to school nurses and health workers.

The annual meeting of directors and members of the National Society for the Prevention of Blindness was held during the afternoon. At the conclusion of the formal business which included a report of the Society's activities for the year from the president and from the managing director, a program on cataract was presented. Dr. William Campbell Posey, who presented the chief paper, is former president of the American Ophthalmological Society, and author of many textbooks on ophthalmology and is particularly well known for *Hygiene of the Eye*. He read a paper on "The Evolution of the Cataract Operation." Explaining the physiology of the cataract as a calcification of the crystalline lens, Dr. Posey traced the development of the treatment of cataract from the earliest operation of "couching," through the operation by extraction and the treatment by needling, to the modern operation of removal of the intracapsular lens, perfected in India fifty years ago by Col. H. Smith. While the early operation for cataract

was often disappointing, the patient with cataract has today 95 chances out of 100 for useful vision after the operation.

While the skill and dexterity of the surgeon is most important in obtaining satisfactory results in operating for cataract, the patient's general health and willingness to co-operate during the tedious period of convalescence, and careful nursing are large factors in the ultimate restoration of useful vision.

Following the presentation of Dr. Posey's paper, motion pictures demonstrating the technique of cataract operation were shown by Dr. Frank C. Parker of Norristown, Pa. Operations, from simple cataract operation and iridectomy with cataract extraction through enucleation of the eyeball were shown with great clearness and detail. These films, which were taken by Dr. Parker, demonstrate the value of motion pictures in teaching medicine, for no attendance at the operation itself could permit such close observation of the technique of cataract removal.

**Auto Accidents and Vision.**—The recent publication by the Metropolitan Life Insurance Company of an illustrated pamphlet, "Seeing is Believing," shows that deaths caused by all of the major diseases are definitely decreasing, while the toll of deaths and accidents from automobiles is sharply mounting. With this increasing hazard of the automobile has come a recognition of the need of adequate vision tests for licensed automobile drivers. In an effort to see the exact status of vision tests throughout the country Dr. Morie F. Weyman of Los Angeles has examined the drivers' tests of each state. Thirty-three states have no vision requirement, while in those states that have such a requirement it runs from a high degree of acuity (20/30 in both eyes) to the mere ability to see ahead. Only in Maryland and Massachusetts is there a field of vision test. Maryland goes further in adding that each rejected candidate must go to an eye specialist of his own choosing for study and correction.

European requirements demand visual acuity of at least 20/40 in one eye and 20/20 in the other, while if sight is lost in one eye, the other must be 20/25. Field of vision must be normal, and there must be no marked diplopia and no marked diminution of light sense.

A plan to enforce these reasonable European standards for vision has been proposed in which the person whose vision does not meet these requirements would lose his license to drive and also be subject to liability because of poor driving, if involved in an accident.

**Mobile Eye Clinic in Poland.**—For rural sections of Poland an eye service which offers speedy and economical operation is the mobile ophthalmic clinic, which seeks to eradicate trachoma through treatment of cases, teaching hygienic practices, inspection of children, and teaching of the local medical personnel; it also offers free and immediate treatment for sufferers of other eye diseases.

**Leslie Dana Medal Goes to Edward M. Van Cleve.**—In recognition of the "most outstanding achievement in the prevention of blindness and the conservation of vision," Mr. Edward M. Van Cleve, principal of the New York Institute for the Education of the Blind, and member of the Board of Directors of the National Society for the Prevention of Blindness, was awarded the Leslie Dana Gold Medal for 1931. The presentation took place November 20, 1931. Mr. Van Cleve played an active part in the formation, in 1915, of the National Society for the Prevention of Blindness, and became its first managing director. As a member of the executive committee, he has continued active participation in the affairs of the Society since his resignation from the staff in 1923. Mr. Van Cleve was one of those most responsible for the successful World Conference on Work for the Blind, held in New York in April of this year, and his activities on behalf of the blind and in the interests of prevention of blindness have brought him into active co-operation with many of the national and local organizations in this field.

**Rural Eye Examinations for Pennsylvania.**—Medical students who are trained to give vision tests are chauffeurs of Pennsylvania's travelling healthmobiles which reach many rural children too far from usual health centers to receive attention. Two physicians, two nurses and two dental hygienists complete the staff of this health center on wheels.

**David Starr Jordan, 1851-1931.**—Among the many services which David Starr Jordan extended to humanity was his interest in the work of the National Society for the Prevention of Blindness. He was one of its honorary vice-presidents from the time that it became a national organization. In appreciation of his fine contribution and in expressing its regret, the board of directors of the National Society for the Prevention of Blindness passed the following resolution:

“A great scientist, a great educator, a great friend; thus have those who knew him best epitomized the personality of David Starr Jordan.

“Yet he was more than these. Or perhaps he bent each of these attributes and accomplishments to the crowning motive of his long, useful life, that of a great peacemaker. He realized that international peace can come only through international understanding and he used the medium of his scientific training, his educational authority and his faculty for friendship to further the bringing in of a universal peace.

“During his presidency of the University of Indiana and the presidency and chancellorship of Leland Stanford University, David Starr Jordan had unlimited opportunities for influencing the lives of thousands of students. He realized, however, that influence must be based upon example and he therefore built up for himself a philosophy of life that exemplified his own creed.

“There were but two kinds of war that David Starr Jordan recognized; war on war, and war on those untoward influences that tend to sap the health and strength of humanity. It was because of his interest in this war on the evils of the world that the National Society for the Prevention of Blindness found in him a friend. At its very first meeting held February 17, 1915, the board of directors of the newly established organization elected him honorary member and honorary vice-president. The official relationship he held until the time of his death.

“As it daily becomes more evident that the arts of peace must supplant the devastations of war, the influence of David Starr Jordan will have ever greater significance, and the National Society for the Prevention of Blindness will continue to wage that war on untoward conditions affecting mankind so that the arts of peace of which David Starr Jordan was so staunch an advocate may have an opportunity of flourishing in the land.”

**Only One of Four Defects Corrected.**—Although the summer round-up of the Parent-Teacher Association makes it a point to

find and urge correction of the first graders' defects, only one in four has any correction made. The child with a vision defect stands a slightly higher chance of having it corrected than those with other defects, for three out of ten have eyes corrected. These figures are an indictment of our national parental conscience.

**New Prevention of Blindness Bulletin.**—Through the prevention of blindness department of the Missouri State Commission for the Blind a mimeographed monthly bulletin is issued. This new publication, *Out of Darkness with Proper Eye Care*, devotes each issue to a specific topic in the field of conservation of vision, with an added bibliography on the subject. Copies may be obtained by writing the Missouri State Commission for the Blind, St. Louis, Missouri.

**Institute on the Conservation of Vision.**—A two-day institute on sight conservation was held for health teachers and school nurses of the Southeastern District, under the direction of the New York State Commission for the Blind, Prevention of Blindness Department, on October 28 and 29. Eye health, eye structure, the eye in disease, and practical steps in prevention of eye disease and blindness were topics of interest to all. The New York State Commission for the Blind is planning to circularize a mimeographed report of the entire proceedings.

**Naturalistic Eye Doctors Menace to Sight.**—From Berlin comes word that a "save your natural eyesight" movement is threatening the advance of rational methods of sight conservation. By urging one therapeutic method for correcting all eye ills, and advising the abolition of eyeglasses, this false doctrine lures patients from legitimate cures through its apparent ease, until their eye difficulties have progressed to a point beyond repair.

**Prevention of Blindness Conference in Japan.**—The movement for the conservation of sight in Japan was given a new impetus when, at the conference for prevention of loss of sight, held in Tokyo under the auspices of the Central Social Work Society, it was decided to set apart October 10 as an annual conservation of sight day.

**Post-school Care for the Exceptional Child.**—A comment made by Dr. Frank Hauxwell, in the *Medical Officer* (England), may apply equally well in the United States. He says that while the exceptional child, handicapped physically, receives expensive care during his school years, there is no follow-up after he leaves school to see that he finds employment compatible with his handicap. Dr. Hauxwell urges the formation of committees to help these children after school days as a means of insuring that the extra money spent on their education will not be wasted.

**Myope Classes in Scotland.**—At the annual meeting of the Scottish National Federation for the Welfare of the Blind, held in Dundee on June 11 and 12, Dr. W. G. Sym spoke on the education of the partially seeing child. He urged the importance of constant wearing of glasses, and stressed the need of educating these children apart from schools for the blind. Mr. William Stone, superintendent of the Royal Blind Asylum pointed out the encouraging fact that infantile blindness is on the wane, and added that authorities had reason to hope that in a generation, no baby would be born blind and no baby would be blinded at birth by ophthalmia neonatorum.

**Investigation of Silver Nitrate Ampules and Capsules.**—The Chemical Laboratory of the American Medical Association has recently reported upon the strength and quality of commercially prepared silver nitrate found in wax and glass ampules. Contrary to the reactions of other chemicals stored in wax ampules, the silver nitrate retains its strength over a reasonable time. Among the leading brands purchased, there was some difference in the strength of the solution, yet all were over the official and required amount. The quantity of solution varies more considerably, and the average drop from wax ampules was less than the specified prophylactic amount. Glass ampules which were tested at the same time, deliver a more generous drop than the wax ampules, but it was generally felt that the danger that exists of a bit of the glass tip getting into the baby's eye overcomes any other advantage that the glass ampule may have. The Laboratory reports that with the glass ampule, in spite of all reasonable care, in many cases, glass was expelled with the drop.

**Eye Movement Camera Perfected in Iowa.**—Although the idea of a camera to study eye movements is not new, students of eye movements will welcome the recently perfected camera constructed at the University of Iowa which has many advantages over the older types of eye movement cameras. This camera records simultaneously binocular horizontal and vertical movements, making a positive record large enough for facile reading at a low cost of production.

The camera has use in many fields of research; it is being used to study eye fixation at far and near points; it facilitates analysis of eye movement habits of good and poor readers; it makes possible analysis of attention values of advertising; it notes changes in reading habits during re-education, the visual co-ordination of stutterers and the disintegration of eye movements during stuttering spasms.

**Non-shatterable Glass Saves Man's Remaining Eye.**—After a citizen of Billings, Montana, lost one eye when a flying piece of windshield glass struck him in the eye, his eye physician advised him to wear only non-shatterable glasses. The wisdom of this advice was demonstrated when, some time later, the man was thrown from his horse, and although his brow and cheek were severely cut, the non-shatterable glass protected his remaining eye.

**United States Health News Urges Early Correction of Vision Defects.**—Urging parents to take children who show any vision or eye defect to the oculist as soon as the defect is suspected, a recent issue of *Health News*, the United States Public Health Service's release, says "The chief advantage of early correction of visual defects is that it usually requires less treatment, and in some cases, such early treatment may cure the condition and secure for the child normal vision which would have been impossible had correction been delayed."

**Eyes and Handedness.**—Although the relationship between handedness and speech has been accepted by psychologists and those concerned with the correction of speech defects, relationship has been recently noted between handedness and crossed-eyes. Naturally left-handed children are often forced to use the right

hand through the misguided efforts of parents and teachers, and the co-ordination efforts which are demanded by this virtual shifting not only of manual power, but of all the physical motor centers of the brain, may cause one eye to lose its muscular activity.

**Ophthalmia Neonatorum in Scotland.**—A circular, issued by the Department of Health of Scotland addressed to medical health officers brings to the fore the great need not only of preventive treatment for ophthalmia neonatorum, but for prompt notification to the authorities so that skilled treatment may immediately be undertaken. In spite of the general care of the eyes of newborn babies in the past nine years, there has been an average of six cases of blindness a year from this unnecessary cause. "The department suggests that all local arrangements with a suitable hospital be made, in order that any case occurring in their area shall receive immediately the skilled care necessary to good results." It continues, "The total number of cases for Scotland is not large, and the expense of making adequate arrangements for treatment will be . . . negligible compared with the cost of the continuing liability of maintenance and education of neglected cases."

**Radio Talk on the Eyes of the Newborn.**—Under the auspices of the Massachusetts Department of Public Health, the State Medical Society recently spoke over the radio on eye infections of the newborn. Pointing out the undisputed value of the Credé prophylaxis in reducing ophthalmia neonatorum, the talk stressed the importance of regarding any eye infection during the first two weeks of life as suspicious, and indicative of stringent treatment under the care of a physician. Although the state of Massachusetts has no law compelling the instillation of nitrate of silver into the eyes of the newborn, the state requires the reporting of all cases, and encourages the use of prophylactic by supplying all physicians with ampules of silver nitrate. While the number of cases of blindness from ophthalmia neonatorum has steadily declined under this care, parents are urged to demand that all babies, born at home or in a hospital, receive the protection of prophylactic drops.

**Vitamin Content of the Eye.**—The close relationship between health and nutrition is no longer a matter of theory but of fact. The relationship between vitamin A and xerophthalmia has been seen, particularly in those countries where the diet is confined to starches, as in India and in China. Now the work of Dr. Arthur M. Yudkin, Yale University, actively demonstrates the presence of the essential vitamin A in the retina of the eye itself, in amounts far greater than in butter-fat, a rich source of this vitamin. When the body is robbed of this vitamin in normal diet, the amount in the retina also decreases.

It has been said that in America, the diet of all classes is so rich in milk, vegetables, eggs and butter-fats, that there is no xerophthalmia problem present. It is significant of the present country-wide depression that a nurse writes from Kansas that "many of the children are suffering from eye troubles, and all of these with bad eyes are from ten to fifteen pounds underweight."

**Missouri Uses Film for Prevention of Blindness.**—Since February, when the Missouri Commission for the Blind acquired the film "Preventing Blindness and Saving Sight," prepared by the National Society for the Prevention of Blindness and the University of Cairo, Egypt, and published by the Eastman Teaching Films, Incorporated, it has been exhibited to more than 60 organizations, and seen by nearly 20,000 people, in Missouri.

**Immediate Care for Ophthalmia Neonatorum.**—The New York State Commission for the Blind has created a small revolving emergency fund to be used for the immediate treatment of cases of ophthalmia neonatorum when it is impossible to secure immediate funds from another source for treatment. Any physician may communicate with the New York Commission for the Blind for this temporary aid, by telephone or telegraph, at its headquarters at 80 Centre Street, New York City. The Commission does not undertake the hospital care, but will lend immediate funds until local welfare can be obtained.

## National Society Notes

STAFF members of the National Society have been spreading the message of sight conservation in co-operation with many organizations in allied fields. Mr. Lewis H. Carris, managing director, was guest of honor at the annual meeting of the Pennsylvania Association for the Blind, at Harrisburg, where he spoke on "Society's Duty to Prevent Blindness." At the joint meeting of the section of ophthalmology of the New York Academy of Medicine and the American College of Surgeons, on October 14, he spoke on "What is Being Done to Protect the Eyes of Industrial Workers."

The National Society regrets to announce the resignation of Dr. B. Franklin Royer, medical director, to take place on December 31, 1931. In his six years of association with the National Society, Dr. Royer has added to and broadened the work of the Society, notably in the public health field.

A new hall at the New York State School for the Blind at Batavia was dedicated and named for Dr. Park Lewis, vice-president of the National Society, on September 12, 1931. Dr. Lewis has returned from Paris, where he attended the annual meeting of the International Association for Prevention of Blindness on November 14.

At the two-day Institute for the Conservation of Vision, extended to the health teachers and school nurses of the South-eastern District by the Prevention of Blindness Department of the New York State Commission for the Blind, Mr. Carris, Mrs. Winifred Hathaway, associate director, and Dr. Royer participated in the program.

Through the efforts of Miss Eleanor P. Brown, secretary of the National Society, the morning session of the annual conference was arranged on "Medical Social Service in Eye Hospitals and Clinics," and Miss Brown presented a paper on "The National Society's part in Training and Placement of Medical-Social Eye Workers."

Miss Mary Emma Smith, director of nursing activities, attended the Annual State Conference of the State Health Department in Little Rock, Arkansas, where she showed the National Society's

newest film, "Preventing Blindness and Saving Sight"; at Fort Smith she demonstrated materials and methods of preschool vision testing before a meeting of teachers and public health workers and to several groups of student nurses. At the invitation of the Kansas State Nurses Association, Miss Smith again demonstrated preschool vision testing technique before that group and at the meeting of the Kansas State League for Nursing Education.

With the beginning of the school year, many calls have come for advice and consultation in the problems of organizing and conducting sight-saving classes. Among the cities Mrs. Hathaway has visited recently are Schenectady, Rochester, and Glen Cove, N. Y. At Rochester, Mrs. Hathaway had the opportunity to address a group of parents and teachers on the general topic of sight conservation, and to show the Society's film, "Preventing Blindness and Saving Sight."

## Current Articles of Interest

**Lighting Fixtures That Are Artistic and Mechanically Perfect,** *The Modern Hospital*, September, 1931, published monthly by the Modern Hospital Publishing Company, Chicago, Illinois. Architects, lighting engineers and decorators who worked on the University Hospitals of Cleveland agreed "to combine in every lighting problem a correct scientific solution with an artistic expression of beauty." The result throughout the eleven new buildings is at once efficient and attractive. In patients' rooms, indirect lighting is supplemented with a small night-light. For the individual bed lights, screens of amber or rose gelatin soften the close light. In the professional units, artificial light was found to be more constant and reliable than daylight; artificial daylight is planned to eliminate glare, shadows and variation in the spectrum colors. In the general quarters, it is important to remember that ease in cleaning lighting fixtures is of paramount importance. Foreseeing lighting needs is more efficient in results and far less expensive.

**Concerning Simple Glaucoma,** Harry S. Gradle, M.D., *American Journal of Ophthalmology*, September, 1931, published monthly by the Ophthalmic Publishing Company, St. Louis, Mo. Provocative tests for the determination of simple glaucoma are described, of particular importance in borderline cases.

**Strabismus in Children,** Donald J. Lyle, M.D., *The Archives of Pediatrics*, October, 1931, published monthly by E. B. Treat & Company, New York, N. Y. The writer classifies types of strabismus and recommends treatment for them through improved physical and mental hygiene; through refractive corrections; through occlusion; through fusion training; through operation. He finds no type of strabismus is outgrown without correction, but on the contrary that all imbalance tends to progress with age.

**Ophthalmology in Aviation Medicine,** William F. Holzer, M.D., *American Journal of Ophthalmology*, September, 1931, published monthly by the Ophthalmic Publishing Company, St. Louis, Mo. A statement of ophthalmic standards for the commercial air pilot stresses the high standards of visual acuity, muscle balance, accommodation, color and field vision required.

**Sex Differences in the Physical Impairments of Adult Life,** Rollo H. Britten, *The American Journal of Hygiene*, May, 1931, published by School of Hygiene and Public Health of the Johns Hopkins University, Baltimore, Maryland. The Division of Research of the Milbank Memorial Fund finds from health examination records of insured persons that the rates of physical impairment are, on the average, higher for women than for men, in spite of the fact that the reverse is true of mortality data; defective vision is more common among women than among men up to the age of 50; housewives show a larger percentage of uncorrected vision than do women of other occupations.

**Common Conditions in Industrial Ophthalmology,** George J. Dublin, M.D., *Journal of the Medical Society of New Jersey*, September, 1931, published monthly by the Medical Society of New Jersey, Orange, N. J. Discussing the common conditions met by the ophthalmologist in industrial medicine, the writer urges the handling of the injured eye conservatively to maintain vision, to preserve appearance and relieve pain. He urges teaching workmen that the best first aid to an injured eye consists of leaving the eye alone, irrigation with clean cold water, and immediate consultation with a physician.

**Healthful Lighting,** William Firth Wells, *The Commonwealth*, April-May-June, 1931, published quarterly by the Massachusetts Department of Public Health, Boston, Mass. Despite the many important discoveries in the relationship between light and health, none of the newer uses of light as therapeutic agents—X-rays or ultra violet rays,—is as important from the health standpoint as that mixed white light known as illumination, through which we are enabled to see. Economically, psychologically and in health returns, the modern use of light, both natural and artificial, must be considered not as a matter of eye comfort, but as part of community public health.

**The Control of Myopia,** Edward Jackson, M.D., *American Journal of Ophthalmology*, August, 1931, published monthly by the Ophthalmic Publishing Company, St. Louis, Mo. Reviewing the literature on myopia, the writer points out the fallacy of believing that myopia cannot be cured to some extent, or prevented. He recommends for its prevention: (1) avoidance of close or continued

eye use during the early childhood years; (2) testing the vision of the preschool child; (3) seeing that all eyes are protected by good posture and adequate lighting during all eye work; (4) providing sight-saving classes for those who are seriously handicapped; (5) seeing that children requiring glasses wear them constantly; (6) guaranteeing the child proper nourishment and adequate rest throughout childhood.

**The Challenge of Syphilis**, Andy Hall, M.D., *Illinois Medical Journal*, October, 1931, published monthly by the Medical Profession of Illinois, Chicago, Ill. Syphilis, the causal factor of much physical and mental delinquency, adds its share to the number of blind in this country. More than 15 per cent of the total number of blind are victims of acquired or congenital syphilis. When routine prenatal care includes a Wassermann test, and all syphilitic mothers are treated in time, no child should lose its life by being born too soon, no child should be born blind or with the blinding disease in its blood. The writer urges upon the general practitioner a more complete examination and deeper understanding of the destructive role played by syphilis.

**Ocular Muscle Operations**, Joseph L. McCool, M.D., *California and Western Medicine*, September, 1931, published monthly by the California Medical Association, San Francisco, Calif. The author urges a full understanding of conditions causing squint for the best correction. He advises correction of refractive errors, and when this fails to correct strabismus, operation of the muscles. No rule of thumb method may be outlined for this delicate type of operation, but each must have careful anatomical study.

**Refraction and Health**, Pierce Shope, M.D., *Journal of the Medical Society of New Jersey*, September, 1931, published monthly by the Medical Society of New Jersey, Orange, N. J. That general health is dependent in large measure upon eye health is a known fact; correction of defects must go beyond adequate refraction to a study of the interior of the orbit and to a study of the eye as part of the whole body.

**Management of Ocular Injuries**, Nelson S. Weinberger, M.D., *New York State Journal of Medicine*, September, 1931, published twice a month by the Medical Society of the State of New York, New York, N. Y. The economic and social loss which follows the

loss of an eye demands that eye examinations after an accident be most carefully made, and that no possible field of injury be overlooked. The writer urges that tetanus antitoxin be administered in eye injuries particularly when the soft part is injured. Protein also aids in combating the possible spread of infection.

**Ophthalmia Neonatorum**, N. K. Lazar, M.D., *Illinois Medical Journal*, September, 1931, published monthly by the Medical Profession of Illinois, Chicago, Illinois. Ophthalmia neonatorum is caused by several different organisms, and gonococcus accounts for less than 50 per cent. The reduction of its incidence since the Credé treatment points out the necessity for the mandatory use of prophylaxis at every birth; silver nitrate is the most successful of prophylactics, and the author adds that treatment of cases already established must be undertaken immediately, consistently and gently to obtain results.

**Cataract**, John M. Wheeler, M.D., *Hospital Social Service*, August, 1931, published monthly by the Hospital Social Service Association of New York City, Inc., New York, N. Y. Defining and describing cataract, the author makes clear to the medical social workers before whom this paper was read, the etiology and types of cataract, the possibilities of cure through operation, and the need of personal help to the person so afflicted. When one eye alone is involved, the author does not advise operation, and he warns against telling the aged patient about the cataract if there is any possibility of his sight outlasting his life. In the discussion which followed this paper, the medical social worker was warned of the need to accustom the operated case to the use of glasses and to the fact that his sight is poor without them. The relationship between adequate prenatal nutrition and congenital cataract was brought out. Early contact between the patient, ophthalmologist and the social worker has an important bearing upon the successful carrying on of the case.

**Medical Social Treatment of Patients Suffering with Cataract**, Jeanne Wertheimer, *Hospital Social Service*, August, 1931, published monthly by the Hospital Social Service Association of New York City, Inc., New York, N. Y. Two cases of patients with incipient cataract and causal complications are cited, in which treatment reached an impasse without the aid of the medical social

worker. When the social and personal background was explained to the ophthalmologist, and the medical reasons for following directed regimes were explained to the patient in terms of her own understanding, both cases were brought to a satisfactory conclusion.

**Medical Social Treatment of Patients Suffering with Cataract,** Grace Cooke, *Hospital Social Service*, September, 1931, published monthly by the Hospital Social Service Association of New York City, Inc., New York, N. Y. The importance of early contact among patient, ophthalmologist, and social worker in order to bring about complete following of the medical orders was stressed. The social worker is in position to interpret and help execute the ophthalmologist's orders to the patient, while through the social worker's understanding of the patient's problems, the doctor is better able to see the patient as a whole.

**Physical Examination of Chinese School Children,** Ting-an Li, M.D., *Quarterly Journal of Chinese Nurses*, March, 1931, published by the Nurses' Association of China. Chinese school child shows a high proportion of physical defects, and health examinations are now instituted in order to correct them. In comparison to the British or American school child, all his defects are more frequent with the possible exception of dental defect. 19.8 per cent have trachoma, 21.9 per cent have visual defects other than this. While ideally complete physical examinations should be held once a year, this is not yet practicable, and biennial examinations, with special periods for special cases have proven adequate. Parents are asked to be present at the examinations for the purpose of gaining their co-operation in correcting the defects and overcoming the causes.

**The Causes of Invasion of Trachoma into Mexico,** Francisco Valenzuela, M.D., *Anales de la Sociedad Mexicana de Oftalmologia y Oto-Rino-Laringologia*, March and April, 1931, Vol. VIII, Nos. 15 and 16, published bi-monthly by the Mexican Society of Ophthalmology and Oto-Rhino-Laryngology, Mexico City, Mexico. Along the west coast of Mexico trachoma was found in increasing amounts, and a relationship was seen between this marked outbreak and the persistent entry of oriental labor at these ports. Since the World War, an increase in the incidence of trachoma has been noted on the east coast, and the author concludes that all

mass movements of peoples, accompanied by privation, semi-famine and lack of sanitary facilities, bring after them a wake of trachoma.

**Importance of Lighting in Occupational Therapy**, Mary Stoy Vaughan, *Occupational Therapy and Rehabilitation*, June, 1931, published bi-monthly by the American Occupational Therapy Association, Baltimore, Md. In the rehabilitation work of patients, proper lighting conditions are of paramount importance. Glare may cause irritation, and undo all the good that the planned occupation was to accomplish. The psychological effect of light reflected from a colored wall or ceiling may be unintentionally depressing. The author gives a few general rules on lighting for close, medium close and distant work but advises consultation with an expert to plan lighting needs most efficiently.

**Boy Made Dull by Poor Eyes**, The Inquiring Reporter, *Everybody's Health*, September, 1931, published monthly by the Minnesota Public Health Association, St. Paul, Minn. A story of a dull boy turned into a normally interested student through correction of an unsuspected defect in his sight opens this popular article on sight conservation for school children. Eye protection begins with the infant's first breath, and must be continued through the school years through care of lighting, good nourishment, correction of defects and special class work for the seriously visually handicapped.

**Medical Follow-up as It Brings Results**, Margaret Van Fleet, *The Trained Nurse and Hospital Review*, October, 1931, published monthly by the Lakeside Publishing Company, New York, N. Y. A study of records of any large out-patient clinic shows three or less visits per patient. In the clinic of the Manhattan Eye, Ear and Throat Hospital it was found that less than 50 per cent of the patients whose eye diseases held a threat of blindness returned more than twice for continued treatment. Patients with refractive errors showed only a slightly better response, for only 53 per cent of these had secured glasses or continued clinic visits until their cases were closed. A well-organized social service follow-up, with carefully kept and organized records, increases the number who are dismissed as cured, and accomplishes the end result of clinic service—to cure and to prevent.

## Contributors to This Issue

**Mr. Edward M. Van Cleve** has been intimately connected with the program for the prevention of blindness since its inception, and served for eight years as the managing director of the National Society; he is principal of the New York Institute for the Education of the Blind and a member of the executive committee of the National Society.

---

**Dr. Willis S. Knighton** is a practising ophthalmologist in New York City and on the staff of the New York Eye and Ear Infirmary.

---

As executive secretary of the Illinois Society for the Prevention of Blindness, **Miss Audrey M. Hayden** has aided the conservation of vision movement in that state as well as in Missouri, where she was previously engaged in carrying on blindness work.

---

**Dr. Herman P. Davidson**, who is a practising ophthalmologist in Chicago, is oculist on the medical staff of the Pullman Car and Manufacturing Corporation; his knowledge of prevention of blindness in industry is gleaned from practical experience.

---

**Miss Gladys L. Dunlop** is supervisor of sight-saving classes in Detroit, Michigan; her contribution to the growth of this special education has extended far outside the bounds of her own domain, for she has participated for the past few years in the summer courses for the training of sight-saving class teachers.

---

**Dr. Louis Lehrfeld**, a practising ophthalmologist in Philadelphia, Pa., is assistant surgeon at the Wills Eye Hospital; his is a familiar name in medical and lay circles for his articles on the eyes and prevention of blindness.

---

**Dr. C. O. Sappington**, who is a member of the editorial board of the SIGHT-SAVING REVIEW, is director of the Division of Industrial Health of the National Safety Council, and conducts a special page on Health in Industry in the *National Safety News*.

# Index—Sight-Saving Review

Volume 1: 1931

Alger, Ellice M. Medical Social Service in Eye Clinics. June, p. 48

## Book Reviews:

Affections of the Eye in General Practice. R. Lindsay Rea. Reviewed by William H. Wilmer. March, p. 66

Artificial Sunlight. M. Luckiesh. Reviewed by Charles Sheard. September, p. 71

Finding and Teaching Atypical Children. Guy L. Hilleboe. Reviewed by Lauretta F. Riester. September, p. 75

Foundation of Health: A Manual of Personal Hygiene for Students. William Barnard Sharp. Reviewed by Margaret Phelps and Thomas D. Wood. June, p. 70

Health, Public and Personal. Ralph E. Blount. Reviewed by Margaret Phelps and Thomas D. Wood. September, p. 74

Industrial Accident Prevention. H. W. Heinrich. Reviewed by National Safety News. September, p. 71

Introduction to Applied Optics, Volume I, General and Physiological. L. C. Martin. Reviewed by Charles Sheard. September, p. 76

Is it Safe to Work?—A Study of Industrial Accidents. Edison L. Bowers. Reviewed by Louis Resnick. March, p. 67

Lecture Experiments in Optics. B. K. Johnson. Reviewed by Charles Sheard. September, p. 77

Manual of the Diseases of the Eye: for Students and Practitioners. Charles H. May. Reviewed by Ellice M. Alger. June, p. 68

Memoria Del Primer Congreso Mexicano de Prevencion de la Ceguera (Transactions of the First Mexican Congress for the Prevention of Blindness). Reviewed by Park Lewis. September, p. 72

Movements of the Eye in Reading. M. D. Vernon. Reviewed by G. T. Buswell. June, p. 65

Social Work Year Book, 1929. Fred S. Hall and Mabel B. Ellis, editors. Reviewed by Francia Baird. June, p. 67

Teaching the Child to Read. Samuel W. Patterson. Reviewed by Roma Gans. March, p. 72

Ten Years of World Co-operation. League of Nations. Reviewed by David Resnick. March, p. 79

Trachôme Conjonctivite Granuleuse. V. Morax and P. J. Petit. Reviewed by Park Lewis. March, p. 68

- Transactions of the First Mexican Congress for the Prevention of Blindness (Memoria Del Primer Congreso Mexicano de Prevencion de la Ceguera). Reviewed by Park Lewis. September, p. 72
- Transactions of the International Ophthalmological Congress, Holland, 1929. Reviewed by Colman W. Cutler. March, p. 74; June, p. 71
- World of the Blind. Pierre Villey. Reviewed by S. C. Swift. June, p. 74
- Your Vision and How to Keep It. H. G. Merrill and L. W. Oakes. Reviewed by S. H. Monson. March, p. 79
- Briefer Comment:
- All About the Baby. Belle Wood-Comstock. September, p. 79
- Can We Get Results from Eye-straining Typography? Douglas C. McMurtrie. March, p. 80
- Corporation Contributions to Organized Welfare Services. Pierce Williams and Frederick E. Croxton. September, p. 77
- Effect of Eyestrain on the Output of Linkers in the Hosiery Industry. H. C. Weston and S. Adams. September, p. 79
- Hygiene of the Eye. Harry Gradle. June, p. 76
- Industrial Health Research Board, eleventh annual report. Medical Research Council. September, p. 77
- Lighting for Seeing. M. Luckiesh and Frank K. Ross. June, p. 77
- Modern Lighting. Frank C. Caldwell. June, p. 76
- Physique and Intellect. Donald G. Patterson. September, p. 78
- Pioneers of Public Health. M. E. M. Walker. March, p. 80
- Preschool Child. Elsie H. Langsdorf. June, p. 76
- Reliability of Some Silent Reading Tests. T. G. Foran and Robert T. Rock, Jr. September, p. 78
- Studies in Illumination. Public Health Bulletin no. 197. June, p. 77
- Ten Years of the Public Health Institute of Chicago. June, p. 77
- Visual Perception of Distance in Young Children and Adults. Ruth Uppdegraff. September, p. 78
- World Panorama of Health Education. March, p. 80
- Carris, Lewis H.
- National Society for the Prevention of Blindness. September, p. 17
- Prevention of Blindness in the United States. March, p. 9
- Chambers, Mildred Smith. Conserving Vision in the Nursery School and in the Kindergarten. March, p. 44
- Chayer, Mary Ella. Nurse's Part in the Conservation of Vision. June, p. 34
- Cinema and the Eye. Park Lewis. September, p. 3

- Childhood, The Eyes in. J. Milton Griscom. June, p. 3
- Classroom, Fundamentals of Lighting in the Home,—and Industry. A. L. Powell. March, p. 36
- Conserving Vision in the Nursery School and in the Kindergarten. Mildred Smith Chambers. March, p. 44
- Conservation of Eyesight with Especial Reference to Glaucoma. George S. Derby. March, p. 14
- Curtin, Thomas H. Eyes in Nephritis and Diabetes. September, p. 29
- Davidson, Herman P. Good Eyesight in Industry. December, p. 38
- Derby, George S. Conservation of Eyesight with Especial Reference to Glaucoma. March, p. 14
- Diabetes, The Eyes in Nephritis and. Thomas H. Curtin. September, p. 29
- Dunlop, Gladys L. Organization of Sight-Saving Classes. December, p. 42.
- Edison, Thomas Alva. (Editorial) December, p. 55
- Editorials:
- Eye and the Venereal Diseases. William F. Snow. March, p. 54
  - Eye Health in Industry. C. O. Sappington. December, p. 56
  - Medical Social Service in Eye Clinics. Ellice M. Alger. June, p. 48
  - National and Local Prevention of Blindness. September, p. 52
  - "Right to be Blind." September, p. 53
  - Sight-Saving Review in the War on Blindness. March, p. 52
  - Thomas Alva Edison. December, p. 55
  - What is a Sight-Saving Class? Winifred Hathaway. June, p. 50
- Ernst Fuchs, 1851-1930—An Appreciation. William Henry Luedde. March, p. 5
- Experiences of an Exchange Teacher in the Myope Classes in Glasgow, Scotland. Louise Rush. June, p. 15
- Eye
- Eye and the Cinema. Park Lewis. September, p. 3
  - Eye and the Venereal Diseases. William F. Snow. (Editorial) March, p. 54
  - Eye Health in Industry. C. O. Sappington. (Editorial) December, p. 56
  - Eye Protection in Industry. Louis Resnick. June, p. 7
  - Eyes in Childhood. J. Milton Griscom. June, p. 3
  - Eyes in Nephritis and Diabetes. Thomas H. Curtin. September, p. 29
- Eyesight, Good, in Industry. Herman P. Davidson. December, p. 38

- Fuchs, Ernst, 1851-1930—An Appreciation. William Henry Luedde. March, p. 5
- Fundamentals of Lighting in the Home, Classroom and Industry. A. L. Powell. March, p. 36
- Glaucoma, Conservation of Eyesight with Especial Reference to. George S. Derby. March, p. 14
- Good Eyesight in Industry. Herman P. Davidson. December, p. 38
- Griscom, J. Milton. The Eyes in Childhood. June, p. 3
- Harper, Grace S. Responsibility of New York State to Prevent Blindness. September, p. 43
- Hathaway, Winifred
- Lighting the Home for Health and Happiness. September, p. 36
- What is a Sight-Saving Class? (Editorial) June, p. 50
- Hayden, Audrey M. Prevention of Blindness in Illinois. December, p. 28
- Henderson, C. G. Prevention of Blindness in India. June, p. 24
- Home
- Fundamentals of Lighting in the Home, Classroom and Industry. A. L. Powell. March, p. 36
- Lighting the Home for Health and Happiness. Winifred Hathaway. September, p. 36
- Illinois, Prevention of Blindness in. Audrey M. Hayden. December, p. 28
- India, Prevention of Blindness in. C. G. Henderson. June, p. 24
- Industry
- Eye Health in Industry. C. O. Sappington. (Editorial) December, p. 56
- Eye Protection in Industry. Louis Resnick. June, p. 7
- Fundamentals of Lighting in the Home, Classroom, and Industry. A. L. Powell. March, p. 36
- Good Eyesight in Industry. Herman P. Davidson. December, p. 38
- Kindergarten, Conserving Vision in the Nursery School and in the. Mildred Smith Chambers. March, p. 44
- Knighton, Willis S. Vision Defects and their Correction. December, p. 17
- La Forge, Zoe. Why Student Nurses Should be Taught Conservation of Vision. September, p. 9
- Lehrfeld, Louis. Venereal Disease and Prevention of Blindness. December, p. 48.
- Lewis, Park. The Cinema and the Eye. September, p. 3
- Lighting
- Fundamentals of Lighting in the Home, Classroom and Industry. A. L. Powell. March, p. 36

- Lighting the Home for Health and Happiness. Winifred Hathaway.  
September, p. 36
- Luedde, William Henry. Ernst Fuchs, 1851-1930—an Appreciation.  
March, p. 5
- Medical Social Service in Eye Clinics. Ellice M. Alger. (Editorial)  
June, p. 48
- National and Local Prevention of Blindness. (Editorial) September, p. 52
- National Society for the Prevention of Blindness. Lewis H. Carris.  
September, p. 17
- Nephritis, The Eyes in—and Diabetes. Thomas H. Curtin. September,  
p. 29
- New York State, Responsibility of—to Prevent Blindness. Grace S.  
Harper. September, p. 43
- Nurse
- Nurse's Part in the Conservation of Vision. Mary Ella Chayer.  
June, p. 34
- Why Student Nurses Should be Taught Conservation of Vision.  
Zoe La Forge. September, p. 9
- Nursery School, Conserving Vision in the—and in the Kindergarten.  
Mildred Smith Chambers. March, p. 44
- Organization of Sight-Saving Classes. Gladys L. Dunlop. December,  
p. 42
- Powell, A. L. Fundamentals of Lighting in the Home, Classroom and  
Industry. March, p. 36
- Prevention of Blindness
- Prevention of Blindness in Illinois. Audrey M. Hayden. December,  
p. 28
- Prevention of Blindness in India. C. G. Henderson. June, p. 24
- Prevention of Blindness in the United States. Lewis H. Carris.  
March, p. 9
- Prevention of Blindness, National and Local. September, p. 52
- Prevention of Blindness, National Society for the. Lewis H. Carris.  
September, p. 17
- Social Aspect of the Movement for the Prevention of Blindness:  
A History. Edward M. Van Cleve. December, p. 3.
- Venereal Disease and Prevention of Blindness. Louis Lehrfeld.  
December, p. 48
- Resnick, Louis. Eye Protection in Industry. June, p. 7
- Responsibility of New York State to Prevent Blindness. Grace S.  
Harper. September, p. 43
- “Right to be Blind.” (Editorial) September, p. 53

- Rush, Louise. Experiences of an Exchange Teacher in the Myope Classes in Glasgow, Scotland. June, p. 15
- Sappington, C. O. Eye Health in Industry. (Editorial) December, p. 56
- Schoolroom
- Fundamentals of Lighting in the Home, Classroom and Industry. A. L. Powell. March, p. 36
- Sight-Saving Class
- Experiences of an Exchange Teacher in the Myope Classes in Glasgow, Scotland. Louise Rush. June, p. 15
- Organization of Sight-Saving Classes. Gladys L. Dunlop. December, p. 42
- What is a Sight-Saving Class? (Editorial) Winifred Hathaway. June, p. 50
- Sight-Saving Review in the War on Blindness. (Editorial) March, p. 52
- Snow, William F. The Eye and the Venereal Diseases. (Editorial) March, p. 54
- Social Aspect of the Movement for the Prevention of Blindness: A History. Edward M. Van Cleve. December, p. 3
- Spectacles in the Making. Gertrude Utstein. June, p. 41
- Thomas Alva Edison. (Editorial) December, p. 55
- United States, Prevention of Blindness in the. Lewis H. Carris. March, p. 9
- Utstein, Gertrude. Spectacles in the Making. June, p. 41
- Van Cleve, Edward M. The Social Aspect of the Movement for the Prevention of Blindness: A History. December, p. 3
- Venereal Diseases
- The Eye and the Venereal Diseases. William F. Snow. (Editorial) March, p. 54
- Venereal Disease and Prevention of Blindness. Louis Lehrfeld. December, p. 48
- Vision Defects and Their Correction. Willis S. Knighton. December, p. 17
- What is a Sight-Saving Class? Winifred Hathaway. (Editorial) June, p. 50
- Why Student Nurses Should be Taught Conservation of Vision. Zoe La Forge. September, p. 9

# The Sight-Saving Review

Volume I

Number 2

June, 1931

LEWIS H. CARRIS, *Editor*

ISOBEL JANOWICH, *Managing Editor*

## BOARD OF EDITORS

MARY BEARD, R.N.	EDWARD JACKSON, M.D.
E. V. L. BROWN, M.D.	A. B. MEREDITH
A. J. CHESLEY, M.D.	A. L. POWELL
CHARLES L. CLOSE	C. O. SAPPINGTON, M.D.
GLADYS DUNLOP	WILLIAM F. SNOW, M.D.
MARY V. HUN	WILLIAM H. WILMER, M.D.
THOMAS D. WOOD, M.D.	

The National Society for the Prevention of Blindness presents the articles printed in THE SIGHT-SAVING REVIEW upon the authority of its writers. It does not necessarily endorse or assume responsibility for opinions expressed or statements made. The reviewing of a book in THE SIGHT-SAVING REVIEW does not imply its recommendation by the National Society.

*Price \$3.00 a year; single copies 75 cents*

Published quarterly by the National Society for the Prevention of Blindness, Inc., Office of Publication, 1315 Cherry Street, Philadelphia, Penna.; Editorial Office, 450 Seventh Avenue, New York, N. Y.

Copyright, 1931, by the National Society for the Prevention of Blindness, Inc. Title Registered United States Patent Office

Application pending entry as second-class matter at Philadelphia, Pa., Postoffice.

## Table of Contents

	PAGE
THE EYES IN CHILDHOOD, J. Milton Griscom, M.D. ....	3
EYE PROTECTION IN INDUSTRY, Louis Resnick. ....	7
EXPERIENCES OF AN EXCHANGE TEACHER IN THE MYOPE CLASSES IN GLASGOW, SCOTLAND, Louise Rush. ....	15
PREVENTION OF BLINDNESS IN INDIA, C. G. Henderson . . . .	24
THE SCHOOL NURSE'S PART IN THE CONSERVATION OF VISION, Mary Ella Chayer, R.N. ....	34
SPECTACLES IN THE MAKING, Gertrude Utstein. ....	41
EDITORIALS:	
Medical Social Service in Eye Clinics. ....	48
What is a Sight-Saving Class? . . . . .	50
NOTE AND COMMENT:	
Prevention of Blindness in Poland. ....	52
Trachoma, A World Problem. ....	52
Poor Lighting the Cause of Accidents. ....	53
Connecticut Ophthalmia Neonatorum Figures for the Decade. ....	53
Prevention of Blindness in Missouri. ....	54
Joseph A. Stucky, M.D., 1857-1931. ....	55
Decrease of Blindness in New York State. ....	56
International Trachoma Prize. ....	57
Ophthalmia Neonatorum Campaign in Pennsylvania . . .	57
World Conference on Work for the Blind. ....	58
CURRENT ARTICLES OF INTEREST. ....	59
NATIONAL SOCIETY NOTES. ....	62
BOOK REVIEWS by G. T. Buswell, Francia Baird, R.N., Ellice M. Alger, M.D., Margaret Phelps and Thomas D. Wood, M.D., Colman W. Cutler, M.D., S. C. Swift . . . .	65
CONTRIBUTORS TO THIS ISSUE. ....	79

## Table of Contents

	PAGE
ERNST FUCHS, 1851-1930—AN APPRECIATION, William H. Luedde, M.D.....	5
PREVENTION OF BLINDNESS IN THE UNITED STATES.....	9
CONSERVATION OF EYESIGHT, WITH ESPECIAL REFERENCE TO GLAUCOMA, George S. Derby, M.D.....	14
FUNDAMENTALS OF LIGHTING IN THE HOME, CLASSROOM AND INDUSTRY, A. L. Powell.....	36
CONSERVING VISION IN THE NURSERY SCHOOL AND IN THE KINDERGARTEN, Mildred Smith Chambers, R.N.....	44
CONTRIBUTORS TO THIS ISSUE.....	51
EDITORIALS:	
The Sight-Saving Review in the War on Blindness.....	52
The Eye and the Venereal Diseases.....	54
NATIONAL SOCIETY NOTES.....	56
NOTE AND COMMENT:	
National Society for the Prevention of Blindness in New Quarters.....	58
Annual Meeting of the International Association for Prevention of Blindness.....	58
Hiram Woods, 1857-1931.....	61
Revised Industrial Lighting Code.....	62
First Windowless Factory Building.....	62
Intensive Campaign Against Industrial Injuries.....	63
CURRENT ARTICLES OF INTEREST.....	64
BOOK REVIEWS by William H. Wilmer, M.D., Park Lewis, M.D., Roma Gans, Colman W. Cutler, M.D., S. H. Monson, M.D.....	66



DR. ERNST FUCHS

# The Sight-Saving Review

Volume I

Number 3

September, 1931

# Table of Contents

	PAGE
THE CINEMA AND THE EYE, Park Lewis, M.D.....	3
WHY STUDENT NURSES SHOULD BE TAUGHT CONSERVATION OF VISION, Zoe La Forge, R.N. ....	9
THE NATIONAL SOCIETY FOR THE PREVENTION OF BLINDNESS, Lewis H. Carris.....	17
THE EYES IN NEPHRITIS AND DIABETES, Thomas H. Curtin, M.D.....	29
LIGHTING THE HOME FOR HEALTH AND HAPPINESS, Winifred Hathaway.....	36
RESPONSIBILITY OF NEW YORK STATE TO PREVENT BLIND- NESS, Grace S. Harper.....	43
EDITORIALS:	
National and Local Prevention of Blindness.....	52
"The Right to be Blind".....	54
NOTE AND COMMENT:	
Prevention of Blindness in Canada.....	55
The Handicapped Child in China.....	55
The Eyes in Seasickness.....	56
Conference on Lighting in Industry.....	56
Prevention of Blindness in Manitoba.....	57
Pointed Editorial on Eye Health for Children.....	57
Blindness in China.....	58
World Co-operation in Ophthalmology.....	58
The Eyes of London's School Children.....	58
Control of Syphilis in New York State.....	59
Sight-Saving Classes Urged for Europe.....	59
Anti-Trachoma Efforts in Japan.....	59
Styes, A Danger Sign.....	60
The Eyes and Moving Pictures.....	60
Wasted Effort in Clinics.....	60
Ophthalmia Neonatorum in Maryland.....	61
Seeing for Sport.....	61
New Eye Institute Planned.....	61
Trachoma Battle in Brazil.....	61
A New Hazard to Children's Eyes.....	62
CURRENT ARTICLES OF INTEREST.....	63
NATIONAL SOCIETY NOTES.....	69
BOOK REVIEWS by <i>The National Safety News</i> , Charles Sheard, Park Lewis, M.D., Margaret Phelps and Thomas D. Wood, M.D., Lauretta F. Riester.....	71
CONTRIBUTORS TO THIS ISSUE.....	80

# The Sight-Saving Review

Volume I

Number 4

December, 1931

---

## Table of Contents

	PAGE
THE SOCIAL ASPECT OF THE MOVEMENT FOR THE PREVENTION OF BLINDNESS: A HISTORY, Edward M. Van Cleve.....	3
VISION DEFECTS AND THEIR CORRECTION, Willis S. Knighton, M.D.....	17
PREVENTION OF BLINDNESS IN ILLINOIS, Audrey M. Hayden..	28
GOOD EYESIGHT IN INDUSTRY, Herman P. Davidson, M.D....	38
ORGANIZATION OF SIGHT-SAVING CLASSES, Gladys L. Dunlop.....	42
VENEREAL DISEASE AND PREVENTION OF BLINDNESS, Louis Lehrfeld, M.D.....	48
EDITORIALS:	
Thomas Alva Edison.....	55
Eye Health in Industry.....	56
NOTE AND COMMENT:	
Annual Meeting of the National Society for the Prevention of Blindness.....	57
Auto Accidents and Vision.....	58
Mobile Eye Clinic in Poland.....	59
Leslie Dana Medal Goes to Edward M. Van Cleve.....	59
Rural Eye Examinations for Pennsylvania.....	59
David Starr Jordan, 1851-1931.....	60
Only One of Four Defects Corrected.....	60
New Prevention of Blindness Bulletin.....	61
Institute on the Conservation of Vision.....	61
Naturalistic Eye Doctors Menace to Sight.....	61
Prevention of Blindness Conference in Japan.....	61

	PAGE
Post-school Care for the Exceptional Child . . . . .	62
Myope Classes in Scotland . . . . .	62
Investigation of Silver Nitrate Ampules and Capsules . . . .	62
Eye Movement Camera Perfected in Iowa . . . . .	63
Non-shatterable Glass Saves Man's Remaining Eye . . . .	63
United States Health News Urges Early Correction of Vision Defects . . . . .	63
Eyes and Handedness . . . . .	63
Ophthalmia Neonatorum in Scotland . . . . .	64
Radio Talk on the Eyes of the Newborn . . . . .	64
Vitamin Content of the Eye . . . . .	65
Missouri Uses Film for Prevention of Blindness . . . . .	65
Immediate Care for Ophthalmia Neonatorum . . . . .	65
NATIONAL SOCIETY NOTES . . . . .	66
CURRENT ARTICLES OF INTEREST . . . . .	68
CONTRIBUTORS TO THIS ISSUE . . . . .	74
INDEX—SIGHT-SAVING REVIEW, Volume 1: 1931 . . . . .	75





